

THE USE OF INSTRUCTIONAL ARRANGEMENTS AND THEIR  
RELATIONSHIP TO ON-TASK BEHAVIORS WITH  
LEARNING DISABLED, EMOTIONALLY HANDICAPPED,  
AND REGULAR CLASS CHILDREN

BY

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Donne puts it this way—"No man is an island entire of itself. Every man is a piece of the continent, a part of the main."

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Abstract of Dissertation Presented to the Graduate Council  
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THE USE OF INSTRUCTIONAL ARRANGEMENTS AND THEIR  
RELATIONSHIP TO ON-TASK BEHAVIORS WITH  
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AND REGULAR CLASS CHILDREN

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Major Department: Special Education

This study was designed to analyze the use of large group, small group, one-to-one, peer teaching, and independent seatwork instructional arrangements with learning disabled (LD), emotionally handicapped (EH), and regular education (normal) students. Additionally, the relationship of on-task behaviors across the instructional arrangements and groups (LD, EH, and normal) was also examined.

Thirty-nine fourth grade students were included in this study. Of this group, 17 students were regular education students, and 11 each were ED and LD students who attended resource rooms.

The data regarding time spent by the three groups across the five instructional arrangements reveal some apparent trends. Except for

peer teaching, the data show that the instructional arrangements are widely used (approximately 70-80 percent of their instructional time) and differences exist for the three groups. For example, EH students spend more time in independent seatwork than either of the other groups.

The data regarding the use of instructional arrangements within the groups yielded some significant findings. LD students spent nearly one-fourth of the instructional day in independent seatwork instructional arrangement. LD students are on-task the highest percentage of time in the instructional arrangement one-to-one. EH students spent nearly half of the instructional academic day in independent seatwork. Results also indicated that EH students obtained the highest percentage of time on-task working independently or working one-to-one with the teacher and/or designated adult. Normal students, on the other hand, spent the highest percentage of total instructional time in large group, independent seatwork, and small group. Regular education students, as a whole, spent the least amount of instructional time in the instructional arrangements one-to-one and peer teaching. Regular education students spent a comparable amount of time on-task in the instructional arrangements large group and independent seatwork. Regular education students spent the least amount of time on-task in one-to-one and peer teaching.

The data regarding the use of the five instructional arrangements among the three groups yielded some significant findings. In large group instruction, both regular education students and LD students were in large group significantly more than EH students; furthermore, regular



education students and LD students spent comparable amounts of time and both groups spent significantly more time in small group than EH students. EH and LD students both spent significantly more time in one-to-one than regular students but did not differ from each other. In peer teaching, the three groups did not significantly differ on the time spent. EH students, however, spent significantly more time in independent seatwork than either of the other two groups. Moreover, LD and regular students spent equivalent times in independent seatwork.

In reference to the amount of on-task time spent in the five instructional arrangements among the three groups, results indicate significant findings. Regular education and LD students spent a significantly higher amount of time on-task in large group instruction than EH students. Similarly, in small group instruction, regular education and LD students spent a significantly higher amount of on-task time than EH students. In one-to-one, LD and EH students spent a significantly larger amount of time on-task than regular education students. In peer teaching and independent seatwork, the three groups did not significantly differ on the amount of on-task time spent.

The results reveal that instructional arrangements are differently used across the three groups and on-task behavior varies across the arrangements. Thus, for teachers to maximize their effectiveness, it is imperative for teachers to consider how they organize instruction across the five instructional arrangements.

## CHAPTER I

### INTRODUCTION

The provision of educational services to handicapped students is a matter of great interest to special educators (Gearheart, 1980; Heward & Olansky, 1980; Stephens, 1977; Wallace & McLoughlin, 1975). In examining educational services for handicapped youth three aspects that must be considered are (a) the instructional arrangements (large group, small group, one-to-one, peer tutoring, and materials with the child) in which service is provided; (b) the various educational settings which may be available for learning disabled (LD) and emotionally handicapped (EH) students (e.g., regular class, resource room, special class); and (c) instructional differences among learners.

One model (see Figure 1) frequently referred to for studying service delivery for exceptional students is the cascade system proposed by Deno (1970). The services range from a basic segregated model to an integrated model. The various model levels reflect service alternatives, with larger level numbers used to identify the more segregated or restricted options. The model's goal is to move students upward to less restrictive alternatives (Meyen, 1978). Downward moves are made only when necessary and only until the student can be returned to a higher or less restrictive placement (Meyen, 1978).

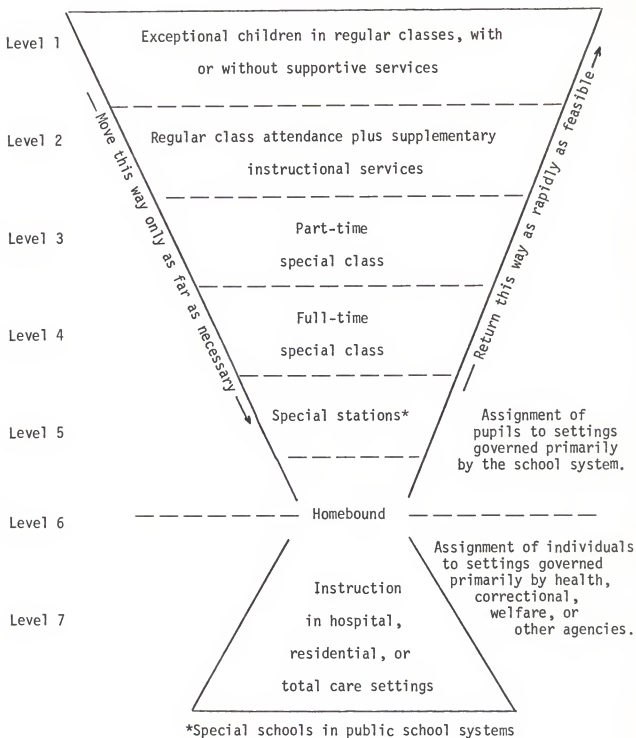


Figure 1

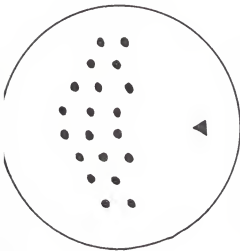
Deno's Cascade System of Special Education Service

From: Deno, E. Special education as development capital. Exceptional Children, 1970, 37(3), 224-237.

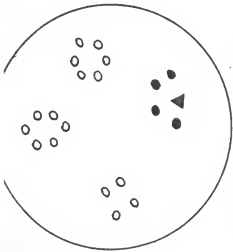
These models have evolved from an attempt to provide individualized instruction to handicapped children with special needs. In addition to the need to offer a setting which facilitates special programming, the educator must examine "how" the instruction occurs within these service delivery systems. Instructional arrangements relate to one aspect of how instruction occurs in respective settings and refers to the way that students are organized for instruction (Mercer, 1979). In the classroom, the teacher may choose one of five instructional arrangements (Mercer & Mercer, 1981; see Figure 2):

1. large group with teacher,
2. small group with teacher,
3. one pupil with teacher,
4. peer teaching, or
5. material with pupil (independent seatwork).

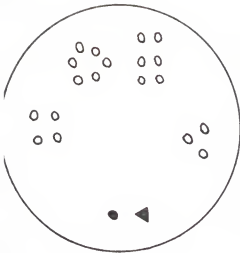
Current literature in special education abounds with descriptions of models for delivery of services to individuals with handicapping conditions (Adelman, 1970; Chaffin, 1975; Deno, 1970; Dunn, 1973; Lilly, 1970). On the contrary, little literature exists concerning specific instructional modes that occur within the various educational settings. Similarly, the need to examine such factors as instructional arrangements, teaching mode, and the child's instructional history is being acknowledged (Mercer, 1979; Meyen, 1978). In essence, while certain special placements for mildly handicapped students are justified and needed, of equal importance is the manner in which instruction is organized regardless of the educational setting.



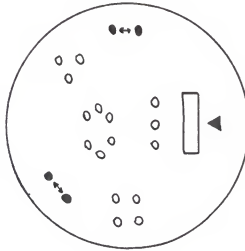
Large Group With Teacher



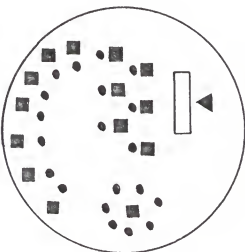
Small Group With Teacher



One Student With Teacher

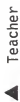


Peer Teaching



Material With Student

KEY:



Teacher



Student



Student receiving direct  
instruction in specified  
arrangement



Material

Figure 2

# Instructional Arrangements

From: Mercer, C., & Mercer, A. R. Teaching students with learning problems. Columbus, OH: Merrill, 1981.

In examining the literature on emotionally handicapped, learning disabled, and regular education students from the perspective of instructional implications in the least restrictive environment, as stipulated by Public Law 94-142, a small group of characteristics emerge. The most prevalent characteristics to emerge for providing instruction in the least restrictive environment (LRE) for mildly handicapped youngsters is the issue of instructional differences among learners. Central to this argument of the least restrictive environment for mildly handicapped youngsters is the concept of "time on task" (Meyen, 1978). Bloom (1974), in discussing time and rate of learning, built on Carroll's (1963) model of school learning in which time is considered the critical variable. As a basis for presenting evidence in support of mastery learning strategies, Bloom utilized Carroll's concept of elapsed time as differentiated from the time the learner spends on tasks engaged in acts of learning. Bloom (1974) cited research conducted by Anderson (1973), Arlin (1973), and Lahaderne (1967) as illustrating a strong positive relationship between time directly engaged in learning and achievement.

Differences between attentional patterns of mildly handicapped children and their nonhandicapped peers have been demonstrated in a number of studies. Extensive reviews of the literature can be found in Keogh and Margolis (1976), Hallahan and Kauffman (1978), and Hagen and Kail (1975). Evidence from the classroom, clinical setting, and laboratory setting support the conclusion that mildly handicapped students spend less time attending to task than do their nonhandicapped peers when matched for chronological age (Meyen & Lehr, 1980).

### Purpose of the Study

The purpose of this study was to analyze the use of large group, small group, one-to-one, peer teaching, and independent seatwork materials with emotionally handicapped, learning disabled, and regular students. In addition, the relationship of on-task behaviors across the arrangements and groups was examined.

### Variables

There are two dependent variables in this study. They were (a) instructional time and (b) on-task behavior. The independent variables were (a) instructional arrangements and (b) categorical label of the child.

### Related Questions

This study was designed to investigate the following questions:

1. What was the percentage of time that LD, EH, and normal children spend in the five instructional arrangements?
2. Were there differences in the amount of time that LD, EH, and regular students spend in large group, small group, one-to-one, peer teaching, and independent seatwork instructional arrangements?
3. What was the percentage of on-task time that LD, EH, and normal children spend in each instructional arrangement?

4. Are there differences in the amount of on-task behaviors that learning disabled, emotionally handicapped, and normal children exhibit in large group, small group, one-to-one, peer teaching, and independent seatwork instructional arrangements?

#### Definition of Terms

As set forth by the Bureau of Education for Exceptional Students, Florida Department of Education (1980), the emotionally handicapped (EH) student is one who after receiving supportive educational assistance and counseling services available to all students, still exhibits persistent and consistent severe behavioral disabilities which consequently disrupt the student's own learning process. This is the student whose inability to achieve adequate academic progress or satisfactory interpersonal relationships cannot be attributed primarily to physical, sensory, or intellectual deficits (State Board of Education Rule SBER 6A-6.3016). (See Appendix A.)

As set forth by the Bureau of Education for Exceptional Students, Florida Department of Education (1980), the term specific learning disabled (SLD) student refers to one who exhibits a disorder in one (1) or more of the basic psychological processes involved in understanding or in using spoken or written language. These may be manifested in disorders of reading, listening, thinking, talking, writing, spelling, or arithmetic. They do not include learning problems which are due primarily to visual, hearing, or motor handicaps, to mental retardation, to emotional disturbance, or to an environmental deprivation (6A-6.3018(1) Florida Administrative Code).



The term instructional arrangement refers to the way that classroom teachers organize their students for instructional purposes (Mercer & Mercer, 1981). For the purpose of this study, five instructional arrangements have been identified:

Large group instruction--whole group instruction consisting of six or more pupils with teacher or designated adult figure.

Small group arrangements--group instruction with teacher and/or designated adult figure with five or less students.

A one-to-one arrangement involves didactic instruction between one student and the teacher and/or designated adult.

Peer teaching arrangement occurs when one student who has mastered a skill teaches another student under the teacher's supervision. Peer teaching may involve demonstration, modeling, feedback, and giving instruction.

Material with the child occurs with the student working with a material independently.

The regular classroom students are in full daily attendance within a regular classroom setting.

On-task behavior is the process of the student actively engaged in paying attention, working, questioning, or responding to the desired task. An operational definition includes the subject

- (1) paying attention to instruction from teacher or peer;
- (2) actively working (eyes on academic material, handwriting, etc.);
- (3) questions the teacher or peer about assignment.

### Limitations

This study only included fourth grade students from Alachua County, Florida, schools. This sample of students was selected from a southeastern United States city. Due to the possible educational and cultural differences of these students, the present study should not be viewed as a representative sample of the students in the remainder of the United States.

### Delimitations

Included in this study were fourth grade students from the Alachua County School System, Alachua County, State of Florida. Alachua County is in the north central part of the State of Florida. The population was fourth grade EH, LD, and normal students.

### Summary

Instructional arrangements such as large group, small group, one-to-one, peer teaching, and individual seatwork are widely used with normal and mildly handicapped students. Moreover, the literature regarding the relative use of these arrangements and data concerning the relationship of these arrangements to on-task behavior is lacking. If a certain instructional arrangement or a combination of arrangements promotes exceptional students' on-task behavior then that arrangement(s) should be organized for optimal effect in the student's educational setting (Cielesz, 1980). This investigation studied the extent to which children receive instruction in these various

instructional arrangements and the effect that these arrangements have on on-task behavior.

## CHAPTER II

### REVIEW OF THE LITERATURE

The following review examines the literature concerning the use of instructional arrangements with mildly handicapped and regular education students. The literature was located by several methods. An ERIC literature search was conducted. Additionally, the Current Index of Journals in Education and the Education Index were examined from 1969 to the present date. Key words used in these searches included instructional arrangements, instructional groupings, large group, small group, individualized instruction, peer teaching, and instructional differences among learners.

References selected for inclusion all met the following criteria:

1. The reference was dated subsequent to 1969.
2. The reference was published in a refereed journal.
3. The article was a report of clinical studies, experimental research, or survey research.

### Instructional Arrangements

Teaching may occur in at least five instructional arrangements.

These instructional arrangements are

1. large group with teacher,
2. small group with teacher,
3. one pupil with teacher,
4. peer teaching, and
5. material with pupil.

#### Large Group Instruction

The large group is appropriate for numerous classroom activities, e.g., having show and tell, discussing interesting events, discussing social studies or science content, taking a field trip, watching a play or movie, brainstorming, and playing a game. Archer and Edgar (1976) suggest heterogeneous grouping as an enrichment activity which allows for fuller participation within the classroom and less exclusion from peers. They also point out that students with learning problems often gain incidental information in the heterogeneous group setting. Generally, large group instruction is inappropriate for teaching the acquisition of specific academic skills (Mercer, 1979). In a large group the instructional needs of the students vary considerably and the teacher is usually unable to respond to these differences in an efficient manner (Mercer & Mercer, 1981).

Kiesling (1978) investigated the relationship between reading instruction time in various instructional arrangements and gains on achievement tests. The subjects were 2400 fourth, fifth, and sixth grade students from the New York State elementary school district. Two test instruments were used to measure reading skills. One of these was the California Achievement Test (1970) and the second was a set of criterion-referenced tests developed by personnel in the Bureau of School and Cultural Research of the New York State Education Department.

From detailed teacher interviews, information was obtained for the number of minutes of instruction that each child received. These data were recorded by the type of instruction (large group, small group) and by type of instructor (classroom teacher, specialist, paraprofessional). For the California Achievement Test, the period between pretest and posttest was 11 weeks, and for the criterion referenced test about nine weeks.

Four modes of instruction were distinguished. Whole group instruction was defined as the situation in which the entire class was involved in experiences such as listening to instruction and class recitation. When subgroups of the class were doing different tasks at the same time, with one of the groups working with the instructor, the instruction was termed small group. Individualized instruction was considered to be instruction tailored to individual needs determined by diagnosis. Individual help was considered to involve helping individual students in drill-skill type exercises.

Main hypotheses that were tested in the study included:

(1) Do educators allocate resources to maximize average gain, or do they follow more democratic procedures such as giving equal instruction to all or attempting to close the gap between bright and dull students?

(2) What happens to instructional effectiveness when the size of the instruction group changes?

(3) How does the relative effectiveness of types of instruction vary according to the achievement level of the student?

Table 1 presents the results of the main hypotheses tested.

Criticisms of this study include a need for better descriptions of the instruction. Secondly, there is no way to be certain about the accuracy of self-reports by teachers concerning their instructional time allocations. A final limitation concerns the possible reliability problems with the criterion referenced tests employed.

Lipson (1974) argues that whole-class or large group instruction has its own unique motivational values, and under certain circumstances, will facilitate student achievement. He further asserts that group lessons often give the learning activity more perceived importance.

Good and Brophy (1977) assert that although allowing students to proceed at their own pace is appropriate, too much individualization (when individualization is seen as the student working alone) will have a negative influence on achievement. Stallings and Kaskowitz (1974) report negative correlations between subject matter achievement and high occurrences of students working alone.

Table 1

Time Allocation by Reading Ability Level: Grades 4, 5, and 6, Each Weighted Equally  
(Minutes of Instruction Received Per Week, Except Where Indicated Otherwise)

Reading Level	Large Group Instruction	Small Group Instruction	Individualized Attention <sup>a</sup>	Total	(Value of) Total Instruction Given <sup>b</sup> Each Student
2 and 3 levels below grade <sup>c</sup>	76	47	59	182	27.7
1 level below grade	43	55	27	125	16.7
at proper grade level	53	56	16	125	13.5
1 level above grade	79	42	8	129	10.3

<sup>a</sup> Individualized instruction and individual help.

<sup>b</sup> This is total number of teacher minutes per week used exclusively by each child; obtained by dividing large group instruction by 27, small group instruction by 9, and other instruction by 3. Thus it was assumed that teachers had three groups per class for small group instruction and that individualized attention can be given to 3 students at once. Average class size in the sample was about 27.

<sup>c</sup> Three levels below grade pertains only to grade 5.



### Small Group Instruction

Adams and Biddle (1970) report that student participation is related to both group size and proximity to the teacher. Students tend to participate more when they are physically closer to the teacher. The small group arrangement usually consists of three to five students and is the major vehicle for teaching academic skills. The teacher divides students into groups according to common skill needs. For example, groups may be based on placement in a basal reader or need for instruction in selected phonemes, sight words, or specific math facts. Carnine and Silbert (1979) report that the research on small group instruction generally indicates positive benefits.

This review of related literature is presented in terms of (a) small group instruction utilizing jigsaw technique, (b) student teams, (c) resource rooms, and (d) application of the resource room model.

Jigsaw techniques. Aronson, Stephen, Sikes, Blaney, and Snapp (1978) sought to foster peer cooperation and tutoring in the classroom through a jigsaw technique for creating interdependence among pupils by dividing the learning task among them and structuring peer interaction in teams. In the jigsaw technique, a different portion of a task is assigned to each of five to six members, so that task completion is contingent upon mutual cooperation. The authors describe their method as follows:

The material to be learned was divided into as many parts as there were group members. Each student learned only one part of the total material and was, in turn, responsible

for teaching his part to his groupmates. However, each group member was responsible for learning all the curriculum material for testing. Groups were given several training sessions to improve communication and tutoring skills, and groups monitored their own interpersonal processes through self-assessment, discussion, and feedback. All groups in the classroom studied identical material subdivided in identical fashion among members of the jigsaw group. (Aronson et al., 1978, p. 123)

Lucker, Rosenfield, Sikes, and Aronson (1976) discussed the academic achievement of fifth and sixth grade pupils from different racial/ethnic backgrounds. A total of 242 white, 25 Mexican American, and 26 black children participated in the experiment, which took place for 45 minutes a day, each day for two weeks. Learning in Jigsaw Classrooms was contrasted with the traditional whole class method, with six teachers conducting Jigsaw Classrooms and five teachers employing their usual teaching techniques.

Data on academic achievement were obtained with a 37-item test, containing true/false, multiple choice, and matching questions contributed by the teachers. Findings for the experimental versus control classes revealed a significant gain for minority group children in these two settings. The 60 minority children in the study achieved 56 percent correct responses (20.9 items) in the experimental group, compared to 49.7 percent correct responses (18.4 items) in the traditional classrooms.

Student teams. The use of student teams is another format for creating small group instruction in the classroom. Much research related to the teaching of mixed-ability groups and the use of competition has been summarized by DeVries and Slavin (1976). Their research and that of their colleagues focuses on the use of teams in

games and tournament competition (TGT). Competition is used to enhance student interest; however, efforts are made to keep the competition manageable (Good & Brophy, 1977).

High, middle, and low achievement students are assigned to mixed ability teams. Students on each team are assigned to compete against students of similar ability in order to win points for their teams. For example, in mathematics, two students may try to see who can solve the most problem equations in 15 minutes (15 pairs of students can be competing at the same time on math tasks of varying difficulty). Similarly, in language arts two students (or several students from each team) could be assigned a crossword puzzle to complete in a specified time period. Individual students or groups of students at each table who win the competition earn points for their team. Teams that accumulate the most points in a specified time period win the tournament.

The reward structure used in the TGT program is a cooperative reward structure. DeVries and Slavin discuss four features:

1. Each group member must be individually accountable to the group for his/her behavior.
2. The participation of all members must be essential.
3. All members of the group must be rewarded at the group level for a group performance.
4. The group must be rewarded as a group frequently.

The usefulness of TGT is based upon the assumption that team competition will produce conditions that facilitate learning. However, DeVries and Slavin (1976) assert that if overused or used inappropriately, the TGT

concept or educational games in general are likely to cause more problems than they solve. Furthermore, the authors note that TGT techniques are most suited to those subjects which have goals that are easy to quantify--simple, concrete skills.

Resource room. One of the most prevalent service arrangements for mildly handicapped children employing small group instruction is the resource room. In this plan the exceptional student spends the majority of the day in a regular class and goes to the resource room for a specified period of time (e.g., 45 to 60 minutes) each day. The resource room teacher, located in the school, works closely with numerous teachers to coordinate the instructional programs of the pupils. The various service alternatives of the resource room presented in Figure 3 indicate how the plan can be used to accommodate the different needs of both students and teachers.

The resource room is widely used because of its flexible service delivery format (Mercer, 1979). Wiederholt, Hammill, and Brown (1978) specify numerous advantages:

1. Students can benefit from specific resource support while remaining integrated with their friends and age-mates in the school.
2. The resource teacher has an opportunity to help more children than does a full-time special class teacher. This is especially true when the resource teacher provides indirect services to children with mild or moderate problems by consulting extensively with their teachers.
3. Resource programs are less expensive to operate than special self-contained classes.
4. Because young children with mild, though developing, problems can be accommodated, later severe disorders may be prevented.
5. Flexible scheduling means that remediation can be applied entirely in the classrooms by the regular teacher with some resource support or in another room by the resource program personnel when necessary; also, the schedule can be quickly altered to meet the children's changing situations and needs.

Resource Room  
Interventions

Regular  
Class-Based  
Interventions

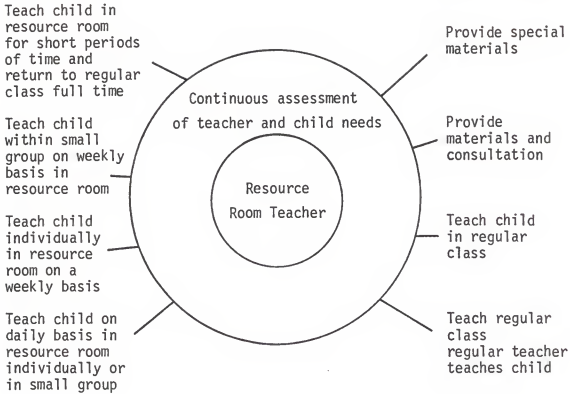


Figure 3

Service Alternatives for the Resource Room Teacher

Source: Adapted in part from C. D. Mercer & J. S. Payne, Programs and services. In J. M. Kauffman & J. S. Payne (Eds.), Mental retardation: Introduction and personal perspectives. Columbus, OH: Charles E. Merrill, 1975, p. 131. (Reprinted by permission.)

6. Since the resource program will absorb most of the handicapped children in the schools, the self-contained special education classes will increasingly become instructional settings for severely handicapped students, the children for whom the classes were originally developed. (pp. 10-11)

Wiederholt, Hammill, and Brown (1978) describe several types of resource room models. Most LD youngsters are served in one of three types: categorical, cross-categorical, or noncategorical programs. Categorical programs serve only LD youngsters. Cross-categorical programs serve exceptional children from among several categorical program areas (i.e., educable mentally retarded, emotionally handicapped, and learning disabled). Noncategorical programs meet the educational needs of youngsters with mild learning problems who may or may not be classified as handicapped.

Jenkins, Mayhall, Peschka, and Jenkins (1974) assessed the effectiveness of resource room teachers as managers of tutors or as small group tutors. In a series of five experiments, individual children were taught both in a small group setting by a resource room teacher and in a tutorial setting by a tutor who was supervised by the resource room teacher. The experiments were performed in six different schools by six different teachers. Relative growth in words recognition, oral reading, spelling, and arithmetic were observed in each of these settings. Different children participated in each experiment, yet each child received instruction under tutorial and small group conditions.

#### Experiment 1--Word Recognition:

Ten learning disabled and three educable mentally retarded primary level children (CA 7-10 years) were subjects. The subjects

were referred to the resource room for reading. Experiment 1 consisted of three replications involving two different schools and two different teachers. Each of the replications dealt with the effect of tutoring versus small group instruction on the rate of word recognition. In each replication, children were instructed for two 10-minute sessions daily. In one session, the children were taught in a small group by the resource room teacher and in the other session they were taught by tutors who were supervised by the resource teacher. Each child learned two sets of isolated words, one under each instructional condition. During group instruction, the subjects were called upon by the teacher to identify and pronounce the words aloud from flash cards. In tutoring instruction, a tutor paired off with a student and presented flash cards. Results indicated that as a group the subjects' proficiency in word recognition grew at a faster rate when tutored by another child than when taught in a small group by a teacher.

#### Experiment 2--Spelling:

The subjects were four third grade learning disabled children each of whom were referred by the classroom teacher for resource room assistance in spelling and reading. The tutors were fifth graders who had received tutorial training by the resource room teacher. Two lists of 30 words each were randomly selected from a group of 60 words taken from three spelling lessons. All children were given a written pretest before instruction began on the first day. Thereafter, a daily spelling test was given immediately following each instructional session. Results of the experiment indicated that

the mean gain on tutor taught words was 17.5 as opposed to 12.0 for small group taught words. Individually, each child learned more words under tutorial instruction than under small group instruction.

#### Experiment 3--Multiplication:

Five fourth grade children who had been referred for resource teacher assistance in multiplication were subjects. Tutors were sixth grade students. Two sets of 18 multiplication facts were drawn from the population of facts ( $2 \times 2$ ) through ( $9 \times 9$ ). One set was randomly selected for tutorial instruction and the other for small group instruction. The number of problems answered correctly in one minute on a written exam was identified as the dependent measure. Each test contained 36 items (the 18 facts occurring twice in random fashion). Results indicated that the average gain on tutored facts was 6.0 while the average gain on small group instruction facts was 3.6.

#### Experiment 4--Oral Reading:

Subjects were five primary level children diagnosed either as emotionally handicapped or educable mentally retarded. All were reading at beginning first grade level. Tutors were children from a fifth grade class. Children were instructed daily under each instructional arrangement (small and tutorial). Individual two-minute reading assessments, in which correct words and errors were recorded, were given each day. Results indicated that subjects showed a higher gain in oral reading skills when tutored by the fifth grade students than on small group instruction.



#### Experiment 5--Self-Study:

This experiment compared tutorial instruction with individual study rather than with small group instruction. Five third grade children were referred to the resource room by the classroom teacher for assistance in multiplication. An arithmetical multiplication task was chosen upon which a student could produce immediate feedback for himself so that the availability of another person was less essential. The design, task, materials, controls, and measures were identical to those in Experiment 3. The children learned one 18-fact set of multiplication combinations from a tutor, and another 18-fact set through self-study. Results indicated that the mean improvement for subjects when tutored was 6.4 problems per minute in contrast to 20 problems per minute gain when subjects engaged in self-study.

Ferindan, VanHandel, and Kovalinsky (1971) described and reported results of a resource room instructional program for learning disabled children. Eleven students remained in regular classes most of the day receiving supplemental instruction from the LD teacher in a resource room. Treatment emphasized instruction in perception, arithmetic, and reading skills. Using Strauss and Lehtinen's (1947) early definition of perception which was stated as "a mental process which precedes thinking and integrates sensations," the authors' major goal was to correct the children's perceptual disturbances.

After eight months of treatment based on a pretest and posttest design, their results were:

- a. gains in reading achievement were not significant, although the average gain for the group was eight months.

b. arithmetic gains were 18 months, resulting in statistically significant improvement.

c. gains in perceptual achievement were significant as measured by the Bender Gestalt Test.

Although the students (ages 7 to 11 years) remained in their regular classes, they were assigned to meet with a special teacher in a resource room located in the same building. Instruction consisted of perceptual training in the areas of visual motor coordination, tactile discrimination, visual memory, auditory discrimination, distance judgment, spatial relations, kinesthetics, and figure-ground perception. In addition, reading and arithmetic instruction were emphasized.

Limitations of this study clearly relate to a lack of control group and failure to control important variables, such as differences in teaching competencies among the regular classroom teachers in which the 11 children were enrolled. However, Stephens (1977) contends that despite its limitations, this study is a valuable contribution in that the curriculum was extensively described.

Glavin, Quay, Annesley, and Werry (1971) reported results of the Temple Resource Room Project. Children in the experimental group were assigned to a resource room program during those periods of the day in which they were functioning least effectively in their regular classes. The program emphasized academic instruction using contingency contracting. They reported that the experimental group made significantly greater gains in reading vocabulary and arithmetic fundamentals than did a comparison group. Changes in social behavior

also occurred, with the greatest improvement among the experimental group while they were in the resource room.

In the Glavin et al. study, 27 students with a mean age of 10 years constituted the experimental group. Thirty-four children with a mean age of 9 years 4 months made up the comparison group. The authors concluded that increases in attending behaviors and decreases in deviant behaviors in the resource rooms appeared immediately after placement. They also found that behaviors acquired in resource rooms were not generalized to regular classes unless mechanisms were developed between the teachers in both placements. For example, deviant social behaviors continued in the regular classes even though they were improved in resource rooms.

Glavin (1974), in a follow-up study to the study reported above, sought to determine whether gains were maintained in regular classes following a one or two year placement in regular classes. He found that generalization of social behavior never occurred in regular classes. That is, in the absence of specific procedures for maintaining the desirable behavior which was taught and displayed in resource rooms, social behavior was not improved in regular classes even though that behavior was quickly changed in resource rooms. Glavin could not account for the lack of significant results in arithmetic attainment. While the experimental group's arithmetic performance had improved more significantly than the control group's in the initial study, the difference between the two groups was not maintained in the follow-up study.

Based on Glavin's follow-up study, Stephens (1977) hypothesized that the following strategies would have improved the chances of generalizing behavior and academic achievement to regular classes:

1. Gradually phase out placement in resource rooms by having the student attend fewer and fewer days for shorter and shorter intervals.
2. Train the regular classroom teachers so that they can reinforce the gains made by students while they were in resource rooms.
3. Develop procedures where resource room and regular teachers routinely discuss tactics for maintaining behavior of specific children.
4. Assist classroom teachers to individualize instruction so that academic gains can continue.

Although the resource room is gaining popularity as an instructional plan for serving mildly handicapped learners, its efficacy has not been extensively examined. Weiner (1969), Sabatino (1971), and Ferinden, VanHandel, and Kovalinsky (1971) studied the effectiveness of the resource room. Using a pre-posttest format, Weiner found that LD children ( $N=72$ ) significantly improved academically after attending a resource room for one hour a day throughout the school year. No LD students gained markedly in self-concept (as measured by the Draw-A-Person Test). Sabatino found that daily contact (40 minute sessions) of LD youngsters with the resource room teacher produced better results than semi-weekly contact (30 minute sessions). Ferinden et al. concentrated on correcting perceptual disturbances of

11 children who remained in regular classes and received supplemental instruction from a special teacher in a resource room. Using a pre-posttest design, Ferinden et al. reported that after eight months of treatment, the children improved in their perception (as measured by the Bender Gestalt Test) and in their math skills (18 months). Although not significant, the average gain in reading achievement was eight months.

Application of the resource room model. A notable application of the resource room model is the Madison School Plan which was developed over a three year period in Santa Monica, California (Taylor, Artuso, Soloway, Hewett, Quay, & Stillwell, 1972). Commonly referred to as the Madison Plan, this model provides a comprehensive approach for non-categorical special educational services for mildly retarded, emotionally handicapped, learning disabled, hearing handicapped, and speech handicapped. It features a learning center located in a regular elementary school. Placement in the learning center is based on the child's readiness for regular classroom functioning. Each child is assigned to spend as much time as possible in the regular classroom. The learning center is made up of four classroom levels based on the child's pre-academic and academic skills, his/her ability to learn, and/or his/her response to regular classroom rewards and reinforcers (Sherry, 1979).

The Pre-academic I level places emphasis on learning to pay attention and following directions. There is no group instruction and children receive checkmarks as reinforcement at regular intervals. Children work individually at self-contained units with a teacher or

aide. The students do not spend any time in the regular classroom. Pre-academic II consists of children who can handle more formal demands of the regular classroom. The Pre-academic II program emphasizes remedial academic work in small group participation. Rewards are still provided for appropriate on-task behaviors. Beginning with Pre-academic II, each student is integrated into a regular classroom for a few minutes during the day.

The third level, Academic I provides a simulated regular classroom. Students work as a large group and receive grades at hourly intervals. This section of the learning center is a simulated regular classroom setting for 12 to 25 children who have primary academic problems that can be dealt with in a large teacher-class setting. Emphasis is placed on helping each student with the specific skills needed to increase the amount of time spent in a regular classroom. In the learning center Academic I, students have the ability to spend increasing amounts of time in the regular classroom and have a readiness for the more traditional system of grading in terms of effort, quality of work, and citizenship (Stephens, 1977).

In Academic II, the setting is the regular classroom composed of 28 to 35 students. Academic II follows the typical public school program. All handicapped students in the program are assigned to one of the Pre-academic I, Pre-academic II, or Academic I settings. Those students in the latter two groups are integrated for varying periods of time in Academic II. Figure 4 presents a pictorial representation of two typical learning center classrooms in the Madison School Plan.

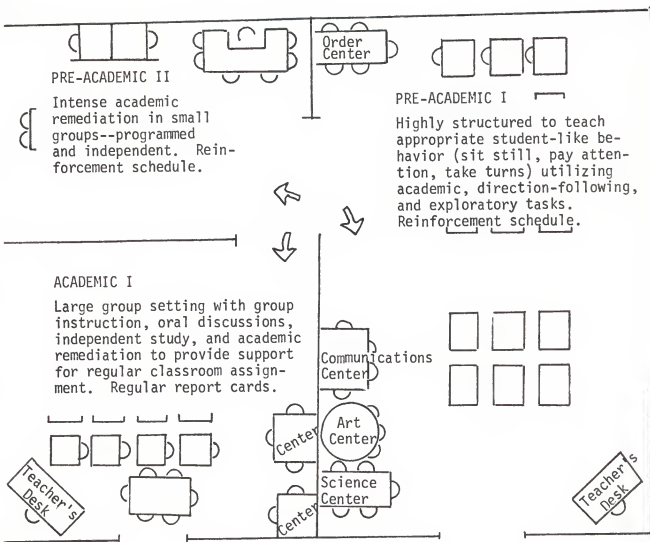


Figure 4

Two Typical Learning Center Classrooms  
Utilizing the Madison School Plan

From: Taylor, F., Artuso, A., Soloway, M., Hewett, F., Quay, H., & Stillwell, R. A learning center plan for special education. Focus on Exceptional Children, 1972, 4(3), 1-8.

Mercer (1979) asserts that although the research regarding the efficacy of resource rooms is beset with definition and methodological problems, it appears that until further research suggests otherwise, the resource room will continue to be used as a model to serve mainstreamed mildly handicapped students. Cegelka and Tyler (1970) enumerated five weaknesses of most efficacy research: (1) sampling is seldom a randomized process, and comparison groups are seldom comparable; (2) inadequate matching of subjects across conditions; (3) different placement histories of exceptional children potentially interact with current program placement, making the results of efficacy studies impossible to interpret; (4) the use of inadequate measurement instruments, the investigator's choice of instruments, and/or the lack of descriptive data concerning the instruments; and (5) failure to control for teaching procedures and curricula.

Sindelar and Deno (1978) contend that descriptions of resource models continue to abound in the literature. And, the number of evaluations of special education resource programs is growing. However, the authors note that careful and conscientious program description is often separated from program evaluation. Programs are described in articles in which they are not evaluated. At the same time, evaluations are reported for resource programs which have not been carefully described or developed. The net result is that while resource programming in service delivery multiplies, the efficacy of program variables has not been established. Table 2 presents a review of studies of resource rooms and academic achievement.



Table 2

## Studies of Resource Rooms and Academic Achievement

Author(s)	Population/ Assignment	Comparisons	Duration	Measures	Results
Glavin, Quay, Annesley, & Werry (1971)	Beh. disruptive or overtly withdrawn Experimental, N=27 Control, N=34 Random assignment of teacher identifications	Resource program with regular class placement	2 year program, 1st year evaluation	CAT	Resource program group scored signifi- cantly higher on reading comprehension and arithmetic funda- mentals than regular class group
Glavin (1974)	(as above)	Second year evaluation follow- ing termination of program	2 year program, 2nd year post- check	CAT	No significant differences between groups
Sabatino (1971)	Learning disabled N=114 Matched on CA, Sex, IQ, and perceptual impairment	Special class with resource prog. A (1 hr./daily); resource program B (1/2 hr./twice weekly); regular class placement	1 school year	14 selected subtests of WRAT, WISC, and ITPA	1. All 3 special groups gained signifi- cantly more than regular class group 2. Resource program A group superior to both resource B and special class groups, which did not differ

Table 2— Continued

Author(s)	Population/ Assignment	Comparisons	Duration	Measures	Results
Jenkins & Mayhal (1974)	A. EMR & LD N=6 and N=24 Random assign- ment B. LD, N=28 1/2 randomly assigned lowest 7 of remaining 1/2	Special class vs. special class & resource program for EMRs; resource program vs. reg- ular program (for reading only) vs. regular class placement	A. 3 1/2 months  B. 1 school year	WRAT  WRAT	1. Resource program group improved at significantly faster rate than either special or regular class group 1. Resource program group significantly out- gained regular group on reading subtest 2. No difference on arithmetic subtest

Summary of research on small group instruction. The research on small group instruction generally shows positive benefits. First, adult supervision apparently contributes to student engagement. Filby and Marliave (Rosenshine, in press) and Fisher, Filby, and Marliave (Rosenshine, in press) found that when students were working with a teacher or another adult, they were engaged from 79 percent to 88 percent of the time. In contrast, when students were working alone they were engaged only 68 percent to 73 percent of the time. Second, small group instruction seems to be a reasonable alternative to one-to-one instruction. Venerky and Shiloh (1972) reported that performance on language tasks for students working in a small group setting was superior to that for students receiving one-to-one instruction. Working with retarded children on language skills, Biberdorf and Pear (1977) reported that group instruction was more efficient in terms of material learned per unit time than individual instruction. Fink and Carnine (1975) and Fink and Sandall (1978) reported similar results. In contrast, a single study (Jenkins, Mayhall, Peschka, & Jenkins, 1974) reported that tutorials in remedial reading were more effective than instruction in small groups. The research, in general, suggests that small group instruction is effective (Carnine & Silbert, 1979).

#### One-to-One Instruction

One student with the teacher or tutorial teaching allows for intensive instruction with a single student and is frequently used to help students learn a new skill (Mercer & Mercer, 1981). Archer and Edgar (1976) recommend that one-to-one instruction be scheduled

daily for students with learning problems. The authors contend that with regular scheduling, the student knows that he will have some time with the teacher to ask questions and receive help.

Fink and Sandall (1980) sought to determine whether small group instruction could be used to effect children's learning, while resulting in significant savings in teaching time, when compared to one-to-one instruction. The subjects were four children who attended the Preschool for Multiply Handicapped Children at the University of Oregon. The children ranged between 52 and 66 months in chronological age and 29 and 33 months in Mental Age.

An intrasubject replication design (ABAB) was employed to assess the effects of one-to-one to small group instruction. During each "A" condition, each child was taught using the one-to-one instruction. During each "B" condition, the children were taught using the small group strategy. In each of the conditions, the children were taught to verbally label six words. The children were tested at the end of each condition to determine the effect of the strategy on learning performance. Seven days later, the test was administered again to test for retention.

Results indicated that children's performance on the test which was administered at the end of each experimental condition showed a mean of 5.83 words labeled correctly in the one-to-one conditions and a mean of 4.71 words labeled correctly in the small group conditions. On the delayed test (seven days later), a mean of 3.15 words were labeled correctly in the one-to-one condition and a mean of 4.25 was labeled correctly in the small group condition.

The authors contend that small group instruction was clearly superior in terms of the amount of time spent in instruction. The mean number of minutes recorded per instructional setting was 11.39 in the one-to-one and 4.49 in the small group setting. Moreover, the authors suggested that small group instruction is a viable alternative to one-to-one instruction in settings wherein staff-client ratios make an equitable distribution of one-to-one instructional services impossible (Fink & Sandall, 1980).

Ronshausen (1979) investigated the effect of the Programmed Math Tutorial (PMT)--programmed tutoring in mathematics--on achievement of kindergarten and first grade children. Three field studies utilizing the Programmed Math Tutorial were completed. The field studies were undertaken to seek answers to the following questions:

1. Is the Programmed Math Tutorial, used as a supplement to the regular class instruction, more effective than classroom instruction alone in helping first graders learn mathematics?
2. Is the revised Programmed Math Tutorial, used as a supplement to the regular classroom instruction, more effective than classroom instruction alone in helping kindergarten children learn first grade mathematics? Effectiveness in helping children learn was to be measured in terms of scores on standardized and criterion referenced mathematics achievement tests.

The Programmed Math Tutorial (PMT) was field tested in two large school systems during the entire school year. In school system "A", first grade children who had been selected earlier to receive tutoring in the participating schools were given the Metropolitan

Readiness Tests (MRT). Using total scores, a stratified random sample was formed in each school. Children were assigned alternately to the tutored group or to the untutored control group, beginning with the lowest score. Tutors were assigned randomly to the schools after the number of children selected for tutoring was known. The following May, children in the experimental and control groups were given the Mathematics Subtest (4A Concepts, 4B Computational Skills) of the MAT, Primary II.

In school system "B", the PMT was used with both kindergarten and first grade children (so that two essentially separate field studies were completed in this school system). At the kindergarten level, 36 children were randomly selected from all readiness levels, 18 in each of two schools. The control group was formed in the same way from the same classroom. The Numbers Subtest of the MAT was used as the pretest.

First grade children in 14 schools were ranked using scores on the Numbers Subtest of the MAT. Each school hired the number of tutors it could provide, producing the desired number of tutoring time slots needed per child. Then in each school, the  $3/2^{\text{S}}$  lowest pretest scores were selected. The children thus selected were assigned randomly to the tutored and control groups in the ratio of about 2 to 1. There was no difference in mean pretest scores between the experimental and control groups.

After eight months of tutoring, children in the experimental and control groups were given two posttest achievement measures. Kindergarten children were given the Math Subtest of the Metropolitan

Achievement Tests, Primer, and the Primary School Mathematics Criterion Test. The latter measure was given to the first graders also, along with the Mathematics Subtests of the Metropolitan Test, Primary I.

Results indicated that in each school system, the mean score obtained by the tutored group exceeded the mean score obtained by the untutored control group, and the differences were significantly different in five of six cases ( $p < .001$ ,  $p < .10$ ). This result occurred at the kindergarten level as well as the first grade level in each school system B ( $p < .001$ ). The mean score obtained by the tutored kindergarten group was essentially the same as that obtained by the untutored control group for first grade children on the Primary School Mathematics Criterion Test (34.5 vs 34.7), even though the difference in mean pretest scores favored the untutored control group. The authors concluded that the combination of the PMT and regular first grade instruction is more effective than classroom tutoring alone in increasing first graders Mathematics achievement. Also, they noted that kindergarten children can learn first grade math topics when the Programmed Math Tutorial is provided as a supplement to the regular classroom instruction.

#### Peer Teaching

In this strategy one student who has proficiency in a skill teaches another student under the teacher's supervision. Peer tutoring arrangements have been developed to ensure that greater attention is given to the needs of each student (Ehly & Larsen, 1980). Allen (1976) reports that research on peer tutoring indicates a

positive effect for the tutor (i.e., it helps the tutor with academic and/or behavioral difficulties). He also notes that the effect for the tutee is generally positive and the critical factor in establishing a mutually beneficial tutor-tutee relationship is directly related to the competence of the tutor regarding content. Mercer and Mercer (1981) report that peer teaching has been successfully used to (a) improve academic skills, (b) foster self-esteem, (c) help the shy student, (d) help students who have difficulty with authority figures, and (e) improve race relations. Surratt, Ulrich, and Hawkins (1969) specifically note that peer tutoring has been successfully used to help manage heterogeneous classrooms which include students with learning problems.

Eaton and Hansen (1978) note that students are a valuable source as peer teachers. They report that "chain teaching" can save energy and time. It involves the teacher showing one student how to perform a skill and the student in turn trains a second and so on. The related research will be reviewed in terms of (a) tutoring in the regular classroom with selected students, (b) intraclass peer tutoring with mildly handicapped youngsters, (c) peer tutoring with the entire class, and (d) a school-wide tutorial program.

Tutoring in the regular classroom. Glass and Griffith (1973) have included peer tutoring as one condition that can easily be established within the regular classroom and used by the teacher to help change the attitudes of nonhandicapped children toward their handicapped peers. Christoplos (1973) outlined a set of techniques that could be used by the regular classroom teacher to facilitate



integration of the handicapped child into the regular classroom. Peer tutoring, according to Christoplos, is one of the most practical ways in which individualization of instruction could be brought into the classroom while reducing the demand and pressure on the teacher.

Oakland and Williams (1973) examined the effectiveness of peer tutors as means of facilitating the reading achievement of other children reading below their grade placement. Thirty-three third and fourth graders (CA 9 to 11) from two elementary schools were selected to be tutees on the basis of teacher judgment and reading achievement scores from the Metropolitan Achievement Test. All children were described by their teachers as being unresponsive to the basal reading instruction and were performing at least six months below grade placement on the Work Knowledge or Comprehension subtests of the Metropolitan, and had not repeated any grades. The children were randomly assigned to one of three groups: (a) total tutorial program, wherein the selected group received virtually all their reading and spelling instruction through the assistance of a peer tutor rather than the classroom teacher; (b) supplementary tutorial program, wherein the 10 minute tutorial sessions supplemented regular classroom reading instruction provided by classroom teachers. Tutorial help for children in this group consisted of oral reading practice from trade books, supplementary readers, or remedial readers. A tutee and a tutor read simultaneously, with the tutor setting a comfortable pace and keeping the place on the page with his/her finger. This method of practice has been referred to as the "neurological impress method"; and (c) non-tutorial program (control group), wherein

the selected group received their reading instruction only from the classroom teacher.

Posttest scores from the Word Knowledge and Comprehension subtests of the Metropolitan Achievement Test were analyzed through the use of analysis of covariance. Pretest scores from the Word Knowledge subtest and IQ were used separately as covariates in analyzing the posttest scores on Word Knowledge. Similarly, pretest scores from the Comprehension subtest and IQ were used separately as covariates in analyzing the posttest scores on Comprehension. Findings indicated that differences between the three treatment groups on the Metropolitan Achievement Test subtests of Word Knowledge and Comprehension were not statistically significant. Statistically significant differences were not apparent for the third-grade children, for the fourth-grade children, or for the third- and fourth-grade children combined. Differences between groups approached significance (in favor of the Supplementary Tutorial group) only on the Comprehension subtest for the combined third- and fourth-grade groups. The authors contend that the evaluation of any peer tutoring project can be effectively done only when both the quantitative data and other pertinent information derived from observations made during the experiment are examined fully (Oakland & Williams, 1973).

Intraclass peer tutoring with mildly handicapped youngsters.

Epstein (1978) investigated the effects of intraclass peer tutoring on the academic performance of mildly handicapped children. In each of 20 primary level learning disability classes (self-contained), five children performing poorly on a word recognition test were

identified as tutors. The tutors were then randomly assigned to either the peer tutoring in reading or to one of four control conditions. Control conditions included peer tutoring math, teacher-instructed, self-instructional, and blind control.

The experimental condition of peer tutoring reading consisted of one tutee and one tutor who spent 15 minutes daily on a reading study lesson in which the tutor assisted the tutee in a review of the specifically designed reading program. In the experimental control, peer tutoring math, one tutor spent 15 minutes daily on an arithmetic lesson assisting a tutee in a one-to-one review of specifically prepared arithmetic problems. With the use of self-instructional control, one person worked alone for 15 minutes daily in the Merrill Phonics Skill test: The Sound and Structure of Words. The teacher-instructed control consisted of one person receiving no formal individual reading instruction in the Merrill Linguistic Reading Program but was a member of the teacher-instructed reading group in the reading program. In the teacher-instructed group, the teacher maintained a progress sheet on the child, as well as the remainder of the participants in the group. In the blind control experimental condition, the subject received no reading instruction other than the general classroom reading program. No progress sheet was kept on the child because the teacher was not aware of the participation of this person in the experiment.

The primary analysis of the study concerned the comparison of the five treatment groups on the word recognition posttest. The 5 X 20 Analysis of Variance revealed a significant effect for conditions ( $F=20.5$ ,  $df=4,76$ ,  $p < .001$ ).

The 3 X 20 Analysis of Variance for the number of words covered indicated that the conditions had a significant effect on the criterion ( $F=10.75$ ,  $df=2,38$ ,  $p < .001$ ). The 3 X 20 Analysis of Variance on the time used to cover the words showed no significant difference among the three treatment groups.

In summary, the results of the primary analysis were as follows: (a) the peer-tutoring reading group performed significantly better than the peer tutoring math, self-instructional, teacher-instructed, and blind-control groups on the criterion reading test, (b) the peer-tutoring reading group covered a significantly greater number of words than the teacher-instructed group, and (c) the peer-tutoring reading group covered fewer words than the self-instructional group, but the difference between the groups failed to reach significance, (d) the difference in the amount of time used to cover the words between the peer tutoring reading group and the self-instructional group was not significant statistically, and (e) the difference in the amount of time used to cover the words between the peer tutoring reading group and the teacher-instructed group was not statistically significant (Epstein, 1978).

Peer tutoring with the entire class. The use of prompting to increase peer tutoring skills in an entire third grade class was investigated by Jason and Frasure (1979). A multiple baseline design was used in establishing three tutoring components: praise, corrective feedback, and re-presenting the question. Two reversal phases were added to the basic experimental design (i.e., multiple baseline) to assess maintenance of tutoring behaviors following termination of

prompting. The effect of the intervention on academic, classroom adjustment, as well as self-esteem measures, was also evaluated.

Experimental children involved in the peer tutoring project were 19 third graders in an inner-city, parochial, elementary school. The control group consisted of 23 third grade youngsters enrolled in another parochial school in the same geographic area.

In the actual program, the third graders assumed three roles: tutor, tutee, and scorekeeper. The children, working in groups of three, rotated roles every 15 minutes. A 15 minute free play period followed the 15 minute peer tutoring program. On alternate sessions, children were tutored in arithmetic and word recognition (the materials were obtained from lessons the teacher was currently introducing and working on in her class).

Prior to the first session with the third grade children, a role play of a correct and incorrect response was demonstrated. A university observer in each group told the children: "We're going to play a teaching game. Watch how this is done. I'm the teacher and \_\_\_\_\_ (another observer) is the student.' I lift this card and say: 'What is this?' (Answer is said.) And then I say: 'That's right.' Now if the student says the wrong answer, this is what I do (the first card is put down, the second is held up): 'What is this?' (Wrong answer is said.) 'This is a \_\_\_\_\_. What is it?"

On the first day, the scorekeeping system was described. The observer pointed to one of the children and said, "You are going to be the scorekeeper." The Child Recording Form was then placed in front

of the child. The observer said, "There are 30 spaces for answers. If the right answer is given, write a plus in the first line. If a wrong answer is given, write a dash."

When the teaching game was finished, each child was praised by the observer and given feedback about how many of the 30 trials were correct. When the child received  $\geq 90$  percent accuracy for that unit, the entire class moved on to the next session.

A multiple baseline reversal design was employed. To gather baseline data, prior to the first session, all children observed a role play of the tutoring game. During Sessions 1-4 children were asked to play the teaching game.

University students prompted praise during Sessions 5-16. Following a correct response, if the tutor did not praise spontaneously, the prompter asked the tutor to praise the tutee. During Sessions 9-16, the observer prompted corrective feedback. If the tutor did not spontaneously offer the correct answer following an incorrect response, the university student told the tutor: "Tell the student this is a \_\_\_\_\_. " Praise was also prompted during this phase. Re-presenting questions were prompted during Sessions 13-16. After the tutor corrected the incorrect tutee response, and failed to spontaneously re-present the question, the observer said: "Ask \_\_\_\_\_ (the tutee), 'What is this?'" Praise and feedback were also prompted during this phase.

For the next six sessions (17-22), the University observers did not prompt the students. Prompting for all three tutoring behaviors occurred during Sessions 23-28. During Sessions 29-33, baseline conditions were reestablished.

In reference to tutoring behaviors, results indicated that teaching behaviors increased after prompting for both the reading and arithmetic units. During the intervention, unprompted praise increased to an average of 79 percent during reading units and to an average of 91 percent during arithmetic units. Reductions in praise were noted during the baseline phase, but high rates of praise were again attained during the last two phases.

Corrective feedback when teaching reading increased from a baseline average of 21 percent to an average of 64 percent after prompting. For arithmetic units, corrective feedback increased from a baseline average of 58 percent to 80 percent after prompting. During the return to baseline phase, feedback increased for reading but decreased slightly for arithmetic. With re-implementation of prompting, feedback increased for reading and decreased slightly for arithmetic. Increases were noted for both arithmetic and reading during the last phase.

Re-presenting questions showed averages of 2 percent for reading units and 7 percent for arithmetic units during baseline. After onset of intervention, representing questions increased to 51 percent for reading units and 40 percent for arithmetic units. During the subsequent return to baseline phase, decreases were noted but with onset of prompting, rates of re-presenting the question increased dramatically. During the last phase, decreases were noted but with onset of prompting, rates of re-presenting the question increased dramatically.

In terms of post point grades, employing an analysis of covariance, the experimental group, in comparison to controls, earned significantly

higher reading ( $F(1,38)=4.05$ ,  $p < .05$ ), spelling ( $F(1,38)=8.61$ ,  $p < .01$ ), and mathematics ( $F(1,38)=5.27$ ,  $p < .05$ ) grades.

School-wide tutorial program. Melaragno (1974) describes a program being conducted in a number of schools in the Unified School District of Los Angeles in which all children in the school are involved as either tutors or learners (Melaragno, 1974). The program was explored as part of a six-year research and development project supported by the Ford Foundation (Melaragno & Newmark, 1971). The following is a detailed description of the project: Two important program features underlie the intergrade tutoring program:

- (1) The program is to be a primary vehicle for reading instruction and is not an appendix to the "regular" program.
- (2) The program is classroom-based in that teachers have the major responsibility for carrying out the program in their own classrooms.

In reference to personnel requirements, classes within the school are paired for tutoring with a primary grade class receiving tutors and an upper class sending tutors. This means that two teachers will work closely together in conducting tutoring and the pairing of classes is done with two dimensions being considered:

- (1) the two teachers' approaches to students are taken into account so that the most compatible pairings possible are made; and
- (2) the classes are separated by at least two years in age and/or grade level.



One non-classroom staff member is designated to be the school's tutoring coordinator. The coordinator has responsibility for planning the school-wide program, training classroom teachers, providing logistical support to teachers, and monitoring the total program.

In the area of teacher preparation, classroom teachers are required to participate in a six-session workshop on tutoring led by the tutoring coordinator. During the workshop, participants are taught such skills as how to train tutors, monitor tutorial behaviors, and the basic characteristics of an effective tutor-tutee relationship.

The training of tutors is conducted by the classroom teacher in two stages:

(1) The first stage is a general orientation to tutoring and the helping relationship; students in the two classes become familiar with one another through information socialization; older students interview younger students whom they will tutor to get better acquainted and older students observe younger ones during reading instruction.

(2) In the second stage tutors are trained in the specific procedures they are to follow when they tutor a younger student. During their specific training tutors are introduced to the materials and methods they will use. In addition, tutors are trained in reinforcement procedures such as the need for frequent positive reinforcement and the minimization of negative reinforcement.

To facilitate the tutoring process, once a week teachers meet with tutors to discuss the most recent tutoring, solve problems that have arisen, and provide additional training to tutors. Regularly the paired teachers get together to review their program and make any additional modifications.

Materials used by tutors are largely those available within the school, including reading texts, workbooks, practice worksheets, and flashcards. Some materials are prepared specially for tutors, such as record-keeping forms, logs for recording daily activities, and summaries of tutoring steps.

In reference to program monitoring, tutoring is conducted in cycles of from five to eight weeks in duration, with a two-week period between cycles. At the end of each cycle teachers complete a form recording student progress and teachers' judgments of the program. This information is summarized by the tutoring coordinator and is fed back to teacher groups for their use in determining areas that are going well and should be maintained; and areas that are in need of revision.

A product evaluation is performed in which pretest and posttest results on student progress are compared to measure the degree of growth made. Typically the product evaluation is carried out at the end of the year and utilizes standardized tests in reading, and measures of student attitudes toward school.

In the school district, tutoring procedures were initially developed for decoding skills. A component skills package was then developed. The decoding skills package provides learners with instruction in sight vocabulary development, phonics skills such as

sounds of letters and sounds of word elements, and word attack skills such as sounding out unfamiliar words. Tutors and learners accomplish these using flash cards, practice exercises, and reading in a basal text.

#### Material with Student

This instructional arrangement does not require the teacher's presence. It is used extensively because it provides students with independent seatwork activities while the teacher engages in small group and one-to-one instruction with other students. These independent student activities are aimed at providing needed practice on skills in which the student has received previous instruction and acquired some mastery (Archer & Edgar, 1976; Stephens, 1977; White & Haring, 1976). The teacher may select from numerous materials such as worksheets, self-correcting materials, instructional games, tape recorder, language master, and commercial materials. Mercer and Mercer (1981) note that teachers need to be very careful with the material with child arrangement because students frequently spend much time in this setting and inappropriate materials can lead to frustration, failure, and practicing of errors.

Dezelle (1971) sought to examine the credibility of programmed instruction in mathematics as a teaching technique for junior high school educable mentally retarded children (EMR). The pupil population of this school came from five school districts, each with two or more EMR classes for junior high school children. One class in each school was selected at random to serve as an experimental class and another class as a control. A total of 132 pupils, enrolled in the 10 classes,

comprised the pool from which two groups of 30 pupils matched in age, sex, race, IQ scores, and pretest scores on the criterion instrument, were identified. Program instruction workbook texts (Sullivan, 1968) were used during a 40-minute period by the experimental group. Conventional methods were used by the control group for the same time period.

Empirical evidence of the effectiveness of programmed instruction in arithmetic for junior high school EMR pupils was inconclusive. Programmed instruction was noted as providing the same results as conventional methods. However, the experimental group adapted well to the format of the programmed instruction and were able to achieve a satisfactory level of self-direction and pursued the sequence of instruction on their own.

Vandever, Maggart, and Nassar (1976) investigated program effectiveness on the development of word recognition for EMR children. The researchers initially assigned 15 classes of primary age educable mentally retarded children to one of three programs for learning to read. Programs included the Merrill Linguistic Series, the Sullivan programmed series, and the Edmark series. Children, rather than classes, were chosen as the unit of analysis because two of the programs were self-paced and programmed.

At the beginning of the school year students were pretested on two measures--a 150 word list from the reading program to which they were assigned and a 50-word list to measure learning and transfer.

Three reading methods that appear to be appropriate for use with EMR children, while being significantly different from each other,

were selected for use in the study. The Merrill Linguistic Series (Fries, Wilson, & Rudolph, 1966) places emphasis on learning words in simple word families. Sullivan Series (Buchanan, 1969) stresses English sound-symbol relationships which enable the child to generalize to other phonetically regular words. The material is programmed. The Edmark Series (Edmark, 1972) is a programmed whole word approach. A 150-word sight vocabulary is taught. The program is individualized and students learn only words they do not know. The child needs only (a) to be able to repeat the words, (b) to indicate the choice by pointing, and (c) to have receptive language sufficient for response to instruction.

Table 3 shows means, standard deviations, and alpha reliabilities for pretests and posttests by groups. Children, rather than classes, were chosen as the unit of analysis. Since children progressed through these programs at their own pace, each child provided a relatively independent data point (Vandever, Maggart, & Nasser, 1976). Only in the Merrill program was group instruction used.

Analysis of variance on the 150 word pretest revealed no difference between the groups prior to reading instruction,  $F(2,104)=.246$ ,  $p < .99$ . Likewise, there were no differences on the 50-word pretest,  $F(2,104) = .004$ ,  $p < .99$ . Analysis of covariance with pretest scores as the covariate and posttest scores as the dependent variable revealed a significant difference on the 150-word test,  $F(2,193)=8.785$ ,  $p < .0005$ . Adjusted means of 49.19, 31.34, and 39.21 words were obtained by children in the Edmark, Sullivan, and Merrill groups respectively indicating that programs produced differences in achievement. A

Table 3

Unadjusted Means (M), Standard Deviations (SD), and Alpha Reliability  
for Pretests and Posttests by Groups

Group	Pretest						Posttest								
	n	50 Words			150 Words			SD	50 Words			SD	150 Words		
		<u>M</u>	<u>SD</u>	<u>Alpha</u>	<u>M</u>	<u>SD</u>	<u>Alpha</u>		<u>M</u>	<u>SD</u>	<u>Alpha</u>		<u>M</u>	<u>SD</u>	<u>Alpha</u>
Edmark	29	7.14	6.79	0.92	15.17	15.93	0.96	12.72	8.98	0.94	50.83	34.69	0.99		
Merrill	45	7.00	6.88	0.92	13.09	13.98	0.96	11.60	9.11	0.95	37.18	28.05	0.98		
Sullivan	33	7.03	7.48	0.94	15.00	13.96	0.95	10.91	10.41	0.96	32.67	29.81	0.98		

Newman-Keuls test was conducted to determine which programs differed. A significant difference at the 5 percent level was found between the mean number of words learned by children in the Sullivan Program and the mean number of words learned by children in the Edmark program favoring Edmark. Analysis of covariance on the 50 word posttest revealed no significant differences between the treatments,  $F(2,103) = 1,277$ ,  $p < .29$ . Adjusted means of 12.61, 10.93, and 11.66 words were obtained by children receiving Edmark, Sullivan, and Merrill reading instruction respectively.

### Summary

A variety of instructional arrangements have been used with regular and special education children. Research in the area of large group instruction indicates that large group instruction has its own unique motivational values; and under certain circumstances will facilitate student achievement (Kiesling, 1978; Lipson, 1974). Brophy and Good (1977, 1978) assert that when the development of work necessary for comprehending a concept can be presented to a large group of students at the same time, teachers will have time to provide individual students with more personalized feedback in private face-to-face contact. The research on small group instruction generally shows positive benefits (Carnine & Silbert, 1979; DeVries & Slavin, 1976; Sharan, 1980).

Various researchers have reported that when students were working with a teacher or another student on a one-to-one basis, students were engaged from 79 percent to 88 percent of the time on the

designated task (Bloom, 1974; Fink & Sandall, 1978; Hagen & Kail, 1975; Sharan, Lazarowitz, & Ackerman, 1980; Soar, 1973). The instructional arrangement, peer tutoring has been tried in a variety of academic settings, and it frequently results in increased achievement by students who do the tutoring, as well as by students who are tutored (Oakland & Williams, 1973). Peer tutoring has been effective on a one-to-one basis with tutor and tutee (Christoplos, 1973; Glass & Griffith, 1970), in entire grades (Jason & Frasure, 1979), and in school-wide programs (Melaragno, 1978).

During independent seatwork, research has indicated that students have successfully worked on a number of activities either individually or in a small group. Studies have indicated that students are more likely to make efficient use of seatwork time if teachers provide carefully structured assignments and institute a motivation system (Vandeever, Maggart, & Nasser, 1976).

It is apparent that each of these instructional arrangements have been done with various classes of children. A close examination of the literature, however, reveals limited information on the percentage of academic instructional time spent in a given instructional arrangement or the percentage of time on task in that given arrangement.

With the advent of P.L. 94-142, the Education for All Handicapped Children Act, more and more "special" children are placed in regular education classrooms, yet limited information is available on the predominant form of instructional arrangement(s) most beneficial to a given child. The effect that such instructional arrangements have on children's performance has not been adequately examined. This study addresses these critical concerns.



## CHAPTER III

### METHOD

Chapter III presents the methods and procedures of the study. It is organized into three major sections: a description of the subjects, a description of the experimental materials, and a description of the procedures. The procedures section will include the experimental design, the dependent variables, and data collection methods.

#### Subjects

The subjects for this study were 39 fourth-grade students from the public school setting of the Alachua County schools. Of these students, 11 were identified as learning disabled (LD) attending a resource room, 11 of these students were identified as emotionally handicapped (EH) attending a resource room, and 17 were regular education fourth grade students in a regular class setting. Random selection was achieved by placing the name and educational diagnosis of each fourth grade pupil in the designated schools in a container, mixing the slips thoroughly, and then drawing out the required number of names required for observation.

To control for the prospect of including subjects with situational problems, each special education teacher was interviewed to determine whether any subjects were exhibiting such problems. If subjects were undergoing transfer adjustment problems, they were excluded from the investigation.

The age range of the sample was restricted to attempt to minimize the variability of observed behavior often characterized by children at different ages. Moreover, it is likely that 9-10 year olds are in the same grade in school (i.e., fourth grade).

### Observers

The data collectors were students in the Department of Special Education of the College of Education at the University of Florida. The data collectors were trained to be behavioral observers by the researcher during a pre-experimental training period. The specific skills the observers acquired included (a) a thorough understanding of the dependent variables (on-task and percentage of time in instructional arrangements); (b) accurate observation of the dependent variables; (c) facility with the recording form; and (d) facility in the use of a watch.

The pre-experimental period (training period) included the following instructional procedures: (a) an explanation of dependent variables, (b) a description of observer responsibilities, and (c) an observation of videocassette tapes in order to attain skills in recording dependent measures. These videocassette tapes depicted children on and off-task in the five instructional arrangements. The extent to which observer

skills and knowledge had been acquired were measured by two methods; (a) a brief test was prepared by the researcher to determine the operational definitions of dependent variables, and (b) the observers' observations of the prerecorded videotapes was compared to a standard. The standard was established by the investigator viewing the tapes and recording the dependent measures (i.e., on-task, time in instructional arrangements). Before training was terminated the trainees' observations and recordings must have reached an 80 percent level of interrater agreement with the standard. Percent agreement was determined by using the formula

$$\frac{\text{\# of recorded occurrences}}{\text{\# of occurrences (standard)}}$$

To assure that the reliability was maintained throughout the study, the principal researcher visited each classroom site and observed behavior. The observation was then compared with the university students' observations to achieve a reliability of measurement score. In each case, interrater reliability was .90 and above.

#### Data Collection

The data were collected during daily observations of the children in their normal school environments, i.e., the classroom, within a period of 45 school days. These observations occurred during academic instructional periods throughout the entire school day. The data were recorded during the observation period by using the Classroom

Observation Sheet Form. The instrument provides for the coding within the five instructional arrangements. A time-sampling technique was utilized wherein the observer recorded the time the student was within a given instructional arrangement, and the amount of time that the subject was off-task while in the instructional arrangement. A stopwatch was utilized to record the total number of minutes each student exhibited on-task behavior within a given instructional arrangement. Seconds were rounded off to the nearest minute.

#### Description of Coding

Operationally defined, on-task behavior refers to performing the prescribed and accepted classroom activity as defined by the classroom teacher. This may include attending to a reciting student or lecturing teacher, verbally responding when requested to do so by the teacher, engaging in class participation or materials when directed, and performing any other activity assigned by the teacher or adult designee. Conversely, off-task behaviors include engaging in unassigned activity, movement about the room without permission, shouting, kicking, and leaving the classroom without permission.

The measures of on-task performance was determined by observing each child every 15th second and recording whether the child was on-task or off-task when observed. For example, the observer would look up at the subject when the second hand of the clock reached the 12, 3, 6, 9, and 12 points. If the child was on-task, the observer would record a "+" and for off-task the observer would record a "0" or "-".

These observations were completed in the following cycle—7.5 minutes of observation and two minutes of rest.

Provided on the Classroom Observation Sheet are spaces for coding of other observational categories (see Appendix B). The reader is referred to Appendix C for an explanation of the terms utilized on the Classroom Observation Sheet. The terms include (a) Wait-(W), (b) Transition-(T), (c) Management-(M), and (d) Break-(B).

### Design and Data Analysis

The initial part of the study was descriptive and included the percentage of time the children spend receiving instruction in various instructional arrangements and the percentage of time on-task in each instructional arrangement was described. A second feature of the study involved an experimental investigation in which comparisons of percent of time in various instructional arrangements as well as percentage of time on-task was made for across the categories of children.

### Variables

Two dependent variables were used in this study; they were (a) percentage of instructional time spent in a given arrangement and (b) time spent on-task. The independent variables were (a) instructional arrangements and (b) student categories, i.e., LD, EH, and regular students.

### Analysis of Data

The results of the data obtained were analyzed by means of analysis of variance (ANOVA). The percentage of time the groups were in a given arrangement was counted and represented in graphic form (see Chapter IV). The percentage of time in any arrangement was tabulated and the percentage of time on-task in any given arrangement was recorded. The alpha level was set at  $\alpha = .05$ . Analysis of main effects in the ANOVA model represent tests of the general hypothesis, analysis of simple effects constitute tests of the specific hypotheses.

Hypothesis 1. There are no differences in the amount of time spent or time on-task in five instructional arrangements within each group.

- a. There are no significant differences among the percentages of time that LD students spend in the five instructional arrangements.
- b. There are no significant differences among the percentages of time that LD students spend on-task in various instructional arrangements.
- c. There are no significant differences among the percentages of time that EH children spend in various instructional arrangements.
- d. There are no significant differences among the percentages of time that EH children spend on-task in various instructional arrangements.

- e. There are no significant differences among the percentages of time that regular education students spend in various instructional arrangements.
- f. There are no significant differences among the percentages of time that regular education students spend on-task in various instructional arrangements.

A format for Hypothesis 1 and its subhypotheses 1a, 1c, and 1e are featured in Table 4. A format for subhypotheses 1b, 1d, and 1f are featured in Table 5.

Hypothesis 2. There are no differences among the three groups in the amount of time or time on-task spent in selected instructional arrangements.

- a. There are no differences among the LD, EH, and regular education students in the percent of time spent in the five instructional arrangements.
- b. There are no differences among LD, EH, and regular education students in the amount of time on-task in the five instructional arrangements.

Table 4

Format for Subhypotheses 1a, 1c, and 1e

Percentage of Time in Instructional Arrangement for Each Group

		LD	EH	Normal
Large Group	ANALYZE TIME SPENT IN EACH CATEGORY	↑	↑	↑
Small Group				
One-to-One				
Peer Teaching				
Independent Seatwork		↓	↓	↓

Percentage of Time in Instructional Arrangements Across Groups

		LD	EH	Normal
Large Group	COMPARE ACROSS GROUPS	←		→
Small Group		←		→
One-to-One		←		→
Peer Teaching		←		→
Independent Seatwork		←		→



Table 5

Format for Subhypotheses 1b, 1d, and 1f

Percentage of Time in On-Task Instructional Arrangement  
for Each Group

		LD	EH	Normal
Large Group	ANALYZE TIME SPENT IN EACH CATEGORY	↑	↑	↑
Small Group				
One-to-One				
Peer Teaching				
Independent Seatwork		↓	↓	↓

Percentage of Time On-Task in Instructional Arrangements  
Across Groups

		LD	EH	Normal
Large Group	COMPARE ACROSS GROUPS	←		→
Small Group		←		→
One-to-One		←		→
Peer Teaching		←		→
Independent Seatwork		←		→

## CHAPTER IV

### RESULTS

Thirty-nine fourth grade students enrolled in five public elementary schools were selected for this study. The purpose of this study was to analyze the use of large group, small group, one-to-one, peer teaching, and independent seatwork (materials with the child) with emotionally handicapped, learning disabled, and regular education students. The relationship of on-task behaviors across these instructional arrangements and groups was also examined.

Table 6 presents a summary table of percentage of time that EH, LD, and regular education children spend in the five instructional arrangements. Results indicate that regular education students spent the highest percentage of time of the three groups in large group instruction ( $\bar{x}$  = 29.50 percent). Further analysis suggests that EH students and LD students spent 7.84 percent and 15.93 percent of the time in large group instruction. Thus, regular education students are engaged in large group instruction three times more than emotionally handicapped students and nearly twice as much as learning disabled students.

Table 6

Summary Table of Percentage of Time that EH, LD, and Regular Education Students Spend in the Five Instructional Arrangements

Educational Designation	Large Group	Small Group	One-to-One	Peer Teaching	Independent Seatwork
EH	$\bar{x} = 7.84$ sd. = 10.12	$\bar{x} = 3.03$ sd. = 6.74	$\bar{x} = 19.20$ sd. = 12.06	$\bar{x} = 2.70$ sd. = 6.02	$\bar{x} = 41.02$ sd. = 19.06
LD	$\bar{x} = 15.93$ sd. = 11.60	$\bar{x} = 17.58$ sd. = 12.42	$\bar{x} = 15.74$ sd. = 7.36	$\bar{x} = 2.28$ sd. = 5.18	$\bar{x} = 28.83$ sd. = 12.62
Regular	$\bar{x} = 29.50$ sd. = 17.34	$\bar{x} = 19.58$ sd. = 14.52	$\bar{x} = 3.45$ sd. = 5.56	$\bar{x} = 1.97$ sd. = 4.47	$\bar{x} = 21.51$ sd. = 11.14

In small group, regular education students spent a mean percentage of 19.58 total time in comparison to 3.03 mean percentage spent by EH students. LD students spent a mean percentage of 17.58 total time in small group instruction. However, in one-to-one instruction, regular education students spent the least amount of time of the three groups ( $\bar{x} = 3.45$ ). EH and LD students, on the other hand, spent a mean percentage total time in one-to-one instruction of 19.20 and 15.74 respectively.

In the instructional arrangement peer teaching, all three groups—LD, EH, and regular students—spent comparable mean percentage times. Regular education students spent a mean total time of 1.97 percent in peer teaching. Similarly, EH and LD students spent comparable mean total times of 2.70 and 2.27 percentage time in peer teaching instruction. In independent seatwork, EH students recorded the highest mean percentage time of the three groups ( $\bar{x} = 41.02$ ). Moreover, regular education and LD students recorded means of 21.51 and 28.83 mean total percentage time respectively.

Table 7 presents a summary table of percentage of on-task time that LD, EH, and regular education children spend in the five instructional arrangements. Results indicate that regular education and learning disabled students spent significantly more time on-task in large group instruction than EH students. In small group, mean on-task times were comparable for the regular education and LD students and their respected means were considerably higher than the mean on-task time of EH students. In one-to-one, the highest mean on-task time was achieved by LD students ( $\bar{x} = 94.10$  percent). EH

Table 7

Summary Table of Percentage of Time On-Task that EH, LD, and Regular Education Students Spend in Each Instructional Arrangement

Educational Designation	Large Group	Small Group	One-to-One	Peer Teaching	Independent Seatwork
EH	$\bar{x} = 28.03$ sd. = 35.50	$\bar{x} = 14.07$ sd. = 31.50	$\bar{x} = 86.37$ sd. = 29.33	$\bar{x} = 18.18$ sd. = 40.45	$\bar{x} = 74.38$ sd. = 19.10
LD	$\bar{x} = 61.35$ sd. = 32.12	$\bar{x} = 52.88$ sd. = 35.00	$\bar{x} = 94.10$ sd. = 10.10	$\bar{x} = 16.57$ sd. = 37.07	$\bar{x} = 67.85$ sd. = 6.40
Regular	$\bar{x} = 61.06$ sd. = 22.61	$\bar{x} = 55.93$ sd. = 33.01	$\bar{x} = 26.54$ sd. = 42.75	$\bar{x} = 17.25$ sd. = 38.44	$\bar{x} = 62.71$ sd. = 17.82

students spent the second highest amount of on-task time with a mean percentage of 86.37 percent. Regular education students spent the lowest amount of on-task time of the three groups in one-to-one with a mean percentage on-task time of 26.54 percent.

Overall, the on-task time in peer teaching was low, but comparable for the three groups. In independent seatwork, all three groups spent a high percentage of time on-task. EH students, however, were on-task slightly more with a mean percentage on-task time of 74.38. Regular education and LD students recorded mean on-task times of 62.71 and 67.85 percent in independent seatwork.

The data appear to suggest that there are variations in the amount of time spent and time on-task by LD, EH, and regular education students in the five instructional arrangements. However, specific detailed analyses of these data are provided in the data collected for the hypotheses.

According to the methods and procedures discussed in Chapter III, the data were collected and analyzed in relation to the two hypotheses and the respective subhypotheses. The remainder of this chapter is organized according to a format which presents a hypothesis, a table or tables of results pertaining to the hypothesis, and a brief summary of the study. In addition, problems and limitations of the study are also discussed.

### Question 1

Hypothesis: There are no differences in the amount of time spent or time on-task in the five instructional arrangements within each group.

#### LD: Time Spent

An analysis of variance repeated measures design was done to determine if significant differences existed among the mean scores of percentage of time spent in the various arrangements by LD students. Results indicated that a significant difference occurred among the means ( $F(4,40) = 5.28$ ). Follow-up procedures using t-statistics were used to compare mean differences in percentage of time spent in the instructional arrangements. Results, as depicted in Table 8, suggest that LD students spent significantly more time in: small group than peer teaching, large group than peer teaching, and one-to-one than peer teaching. LD students, on the other hand, spent significantly less time in peer teaching than independent seatwork.

#### LD: Time On-Task

To determine if significant differences occurred among the mean on-task scores obtained by LD students in the five instructional arrangements, the analysis of variance repeated measures design statistic was used. Results indicate a significant difference exists among the means ( $F(4,40) = 10.52$ ).

Table 8

Mean Differences Within Pairs of Groups On the Amount of  
Time and Time On-Task Spent by LD Students in the  
Five Instructional Arrangements

Pairs of Groups	Percentage of Time Mean Difference	Time On-Task Mean Difference
1. Large group vs. small group	1.65	8.47
2. Large group vs. one-to-one	.19	-32.75*
3. Large group vs. peer teaching	13.65*	44.78*
4. Large group vs. independent seatwork	7.90	6.5
5. Small group vs. one-to-one	1.84	-41.22*
6. Small group vs. peer teaching	15.30*	36.31*
7. Small group vs. independent seatwork	6.25	14.97
8. One-to-one vs. peer teaching	13.46*	77.53*
9. One-to-one vs. independent seatwork	8.14	26.25
10. Peer teaching vs. independent seatwork	-21.55*	-51.28*

\*Denotes significant differences at the .05 level.



Follow-up procedures using t-statistics were used to compare differences in percentage of on-task time spent by LD students within the groups. As shown in Table 8, LD students spent significantly less time on-task in large group than one-to-one. LD students spent significantly more time on-task in large group than peer teaching, small group than peer teaching, and one-to-one than peer teaching. LD students spent significantly less time in small group than one-to-one and peer teaching than independent seatwork.

#### EH: Percentage of Time Spent

To determine if significant differences existed among the mean scores of percentage of time spent by EH students within the five instructional arrangements, an analysis of variance repeated measures design was used. Results indicated that significant differences exist among the means ( $F(4,40) = 17.33$ ). Follow-up procedures using t-statistics were used to compare differences in the mean score of percentage of time spent in the instructional arrangements by EH students. As indicated in Table 9, EH students spent significantly more time in independent seatwork than in other arrangements. EH students spend significantly more time in one-to-one than peer teaching.

#### EH: On Task

To determine if significant differences occurred among the means on the percentage of on-task behaviors exhibited by EH students in the five instructional arrangements, the analysis of variance repeated measures statistic was used. Results indicated that

Table 9

Mean Differences Within Pairs on the Amount of Time  
and Time On-Task that EH Students Spend in  
the Five Instructional Arrangements

Pairs of Groups	Percentage of Time Mean Difference	Time On-Task Mean Difference
1. Large group vs. small group	4.81	13.97
2. Large group vs. one-to-one	6.64	-58.34*
3. Large group vs. peer teaching	5.14	9.86
4. Large group vs. independent seatwork	-33.18*	-46.34*
5. Small group vs. one-to-one	-16.17*	-72.31*
6. Small group vs. peer teaching	.33	-4.11
7. Small group vs. independent seatwork	-37.99*	-60.31*
8. One-to-one vs. peer teaching	16.50*	68.20*
9. One-to-one vs. independent seatwork	-21.82*	12.00
10. Peer teaching vs. independent seatwork	-38.32*	-56.21*

\*Denotes significant differences at .05 level.

a significant difference existed among the means ( $F(4,40) = 12.25$ ). Follow-up procedures using t-statistics were used to compare differences in percentages of on-task time spent by EH students within the groups. As shown in Table 9, EH students spent significantly more time on-task in one-to-one than large group, independent seatwork than large group, one-to-one than small group, independent seatwork than small group, independent seatwork than peer teaching, and one-to-one than peer teaching.

#### Regular: Time Spent

To determine if a significant difference occurred within the means of the regular education students, an analysis of variance repeated measures design procedure was used. Results indicated that differences occurred among the means ( $F(4,64) = 14.89$ ). To determine which of the means within the groups differed significantly, follow-up t-statistics were used. Results indicated that regular education students spend significantly more time in large group than in small group, one-to-one, and peer teaching. In addition, regular education students spent significantly more time in small group than in one-to-one or peer teaching. Finally, regular education students spent significantly more time in independent seatwork than they do in one-to-one or peer teaching.

#### Regular: Time On-Task

To determine if significant differences existed among the on-task mean scores of regular education students in the five instructional arrangements, an analysis of variance repeated measures

Table 10

Mean Differences Within Pairs of Groups on the Amount of  
Time and Time On-Task That Regular Education Students Spend in  
the Five Instructional Arrangements

Pairs of Groups	Percentage of Time Mean Difference	Time On-Task Mean Difference
1. Large group vs. small group	9.93*	5.13
2. Large group vs. one-to-one	26.04*	34.52*
3. Large group vs. peer teaching	27.53*	43.81*
4. Large group vs. independent seatwork	7.99	-1.65
5. Small group vs. one-to-one	16.12*	29.39*
6. Small group vs. peer teaching	17.60*	38.68*
7. Small group vs. independent seatwork	-1.94	-6.78
8. One-to-one vs. peer teaching	1.48	9.29
9. One-to-one vs. independent seatwork	-18.06*	-36.17*
10. Peer teaching vs. independent seatwork	-19.54*	-45.46*

\*Denotes significant differences at .05 level.

Table 11

Analysis of Variance Summary Table Depicting Differences in the Amount of Time that Regular, EH, and LD Students Spend in the Five Instructional Arrangements

Instructional Arrangement	Source	DF	MS	F
Large Group	Between Groups	2	1667.971	8.363*
	Within Groups	36	199.451	Significance: .001
Small Group	Between Groups	2	994.065	6.656*
	Within Groups	36	149.344	Significance: .003
One-to-One	Between Groups	2	975.162	14.091*
	Within Groups	36	69.203	Significance: .000
Peer Teaching	Between Groups	2	1.807	0.068
	Within Groups	36	26.401	Significance: .093
Independent Seatwork	Between Groups	2	1383.642	6.906*
	Within Groups	36	200.356	Significance: .003

\*p > .05

design was used. Results indicated that significant differences existed in the mean scores ( $F(4,64) = 7.24$ ). Follow-up procedures using t-statistics indicated that regular education students spent significantly more time on-task in large group than in one-to-one and peer teaching, and in small group than in one-to-one and peer teaching. As illustrated in Table 10, regular education students spent significantly less time on-task in one-to-one than independent seatwork and less time on-task in peer teaching than in independent seatwork.

### Question 2

Hypothesis: There are no differences among the three groups in the amount of time or time on-task spent in the five instructional arrangements.

#### Large Group: Time Spent

Results of an analysis of variance procedure to determine if there was a difference in the amount of time that LD, EH, and regular education students spent in the five instructional arrangements are found in Table 11. Analysis of results indicated significant differences occurred among the groups in large group, small group, one-to-one and independent seatwork. To test the significant interaction effect, Tukey's HSD posteriori multiple comparison test was applied to determine pairwise comparisons among means. Represented in Table 12 are pairwise comparisons depicting percentages of time spent in instructional arrangements among the groups. An

Table 12

Pairwise Comparisons Depicting Percentages of  
Time Spent in Instructional Arrangements Among the Groups

Groups	Means
<u>Large Groups</u>	
Regular vs. EH*	29.50 vs. 7.84
Regular vs. LD*	29.50 vs. 15.93
EH vs. LD	7.84 vs. 15.93
<u>Small Groups</u>	
Regular vs. EH*	19.58 vs. 3.03
Regular vs. LD	19.58 vs. 17.58
EH vs. LD*	3.03 vs. 17.58
<u>One-to-One</u>	
Regular vs. EH*	3.45 vs. 19.20
Regular vs. LD*	3.45 vs. 15.74
EH vs. LD	19.20 vs. 15.74
<u>Peer Teaching</u>	
Regular vs. EH	1.97 vs. 2.70
Regular vs. LD	1.97 vs. 2.28
EH vs. LD	2.70 vs. 2.28
<u>Independent Seatwork</u>	
Regular vs. EH*	21.51 vs. 41.01
Regular vs. LD	21.51 vs. 28.83
EH vs. LD*	41.02 vs. 28.83

\*Denotes pairs of groups significantly different at the .05 level.

examination of these results indicates that eight pairwise comparisons exceeded the critical HSD values and are significant at the .05 level. Tukey's HSD procedure indicated that the mean of the EH group was found to be significantly different from the mean of the regular education group; the mean of the LD group was found to be significantly different from the mean of the regular education group.

#### Large Group: On-Task

To determine if significant differences occurred among the mean on-task scores obtained, an analysis of variance procedure was used. Results of the analysis of variance summary table depicting differences in the amount of on-task behaviors exhibited by regular, LD, and EH students in the five instructional arrangements are found in Table 13. Results indicate that significant differences in the mean scores occurred among the groups in large group, small group, and one-to-one instructional arrangements.

To determine where the significant differences among the mean scores occurred in the three groups, Tukey's HSD procedure was used. As indicated in Table 14, six pairwise comparisons exceeded the critical HSD values and are significant at the .05 level. Results indicate that the mean on-task score obtained by the EH group ( $\bar{x} = 28.03$ ) differed significantly from the mean on-task score received by the regular education students ( $\bar{x} = 61.05$ ) and the LD students ( $\bar{x} = 61.35$ ). Thus, the EH group spent significantly less time on-task than either of the other groups in the large group arrangement.



Table 13

Analysis of Variance Summary Table Depicting Differences in Amount of On-Task Behaviors Exhibited by Regular, LD, and EH Students in the Five Instructional Arrangements

Instructional Arrangement	Source	DF	Ms	F
Large Group	Between Groups	2	4335.535	5.019*
	Within Groups	36	863.890	Significance: .012
Small Group	Between Groups	2	6560.180	5.949*
	Within Groups	36	1102.793	Significance: .006
One-to-One	Between Groups	2	19620.524	18.169*
	Within Groups	36	1079.900	Significance: .000
Peer Teaching	Between Groups	2	7.251	0.005
	Within Groups	36	1493.199	Significance: .995
Independent Seatwork	Between Groups	2	455.374	1.793
	Within Groups	36	254.037	Significance: .187

\*p > .05

Table 14

Pairwise Comparisons Depicting Percentages of Time  
On-Task in the Five Instructional Arrangements Among the Groups

Groups	Means
<u>Large Group</u>	
Regular vs. EH*	69.06 vs. 28.03
Regular vs. LD	61.06 vs. 61.35
EH vs. LD*	28.03 vs. 61.35
<u>Small Group</u>	
Regular vs. EH*	55.93 vs. 14.07
Regular vs. LD	55.93 vs. 52.88
EH vs. LD*	14.07 vs. 52.88
<u>One-to-One</u>	
Regular vs. EH*	26.54 vs. 86.37
Regular vs. LD*	26.54 vs. 94.10
EH vs. LD	86.37 vs. 94.10
<u>Peer Teaching</u>	
Regular vs. EH	17.25 vs. 18.18
Regular vs. LD	17.25 vs. 16.57
EH vs. LD	18.18 vs. 16.57
<u>Independent Seatwork</u>	
Regular vs. EH	62.71 vs. 74.38
Regular vs. LD	62.71 vs. 67.85
EH vs. LD	74.38 vs. 67.85

\*Denotes pairs of groups significantly different at the .05 level.

### Small Group: Time Spent

As represented in Table 11, the analysis of variance procedure indicated a significant difference in the amount of time spent in small group instruction by the three groups. The follow-up Tukey HSD procedure as illustrated in Table 12 indicated that in small group instruction, the mean of the EH group was significantly different from the mean of the LD group; the mean of the EH group was significantly different from the mean of the regular education students. Thus, in small group instruction, the percentage of time spent by EH students was significantly less than the time spent by LD and regular education students. Furthermore, the percentage of time spent by LD and normal students was equivocal.

### Small Group: Time On-Task

The analysis of variance summary table depicted by Table 13 indicates that there was a significant difference among the groups in the percentage of time on-task. As shown in Table 14, Tukey's HSD procedure indicated that two pairwise comparisons exceeded the critical value and are significant at the .05 level. Results obtained from the Tukey HSD procedure on percentage of time on-task in small group instruction revealed that the mean score obtained by the EH group ( $\bar{x} = 14.07$ ) differed significantly from the mean score of LD students ( $\bar{x} = 52.87$ ) and the mean score of the regular education students ( $\bar{x} = 55.93$ ). In small group instruction, EH students spent significantly less time on-task than regular education and LD students.

#### One-to-One: Time Spent

As shown in Table 11, the analysis of variance procedure indicated significant differences among the mean scores of the three groups in one-to-one instruction. Results of the Tukey HSD procedure indicated that two pairwise comparisons exceeded the critical value and are significant at the .05 level. As shown in Table 12, in one-to-one instruction, the mean of the regular education students ( $\bar{x} = 3.45$ ) was significantly different from the mean of the learning disabled students ( $\bar{x} = 15.74$ ). In one-to-one instruction, the mean of the regular education group ( $\bar{x} = 3.45$ ) was significantly different from the mean of the EH group ( $\bar{x} = 19.20$ ). Regular education students spent significantly less time in one-to-one than LD students; regular education students spent significantly less time in one-to-one than EH students.

#### One-to-One: Time On-Task

As depicted by the Analysis of Variance Summary Table (Table 13), significant differences were found among the means on the percent of on-task time spent in one-to-one instruction. To determine where the significant differences occurred among the means of the three groups, Tukey's HSD procedure was used. Results indicated that the mean on-task score obtained by the regular education group was significantly less than the mean on-task score obtained by LD and EH students. Thus, regular education students spent significantly less time on-task in one-to-one than both EH and LD students.

### Peer Teaching: Time Spent

As depicted in Table 11, no statistical significance was found among the means of the groups in peer teaching. In peer teaching, EH students spent a mean percentage total time of 2.70. LD and regular students spent mean percentage times of 2.28 percent and 1.97 percent in peer teaching.

### Peer Teaching: Time On-Task

In peer teaching, the percentages of time on-task by the three groups were similar. LD students spent a mean percentage on-task time in peer teaching of 16.57. EH and regular education students obtained mean on-task scores of 18.18 percent and 17.25 percent in peer teaching instruction. As shown in Table 14, Tukey's HSD procedure indicated that no pairwise comparisons exceeded the critical value and were significant at the .05 level.

### Independent Seatwork: Time Spent

The analysis of variance summary table shown in Table 11 indicates that there was a significant difference among the mean scores in the amount of time spent in independent seatwork by EH, LD, and normal students. Follow-up procedures using the Tukey HSD statistic indicate that two pairwise comparisons exceeded the critical value and are significant at the .05 level. As indicated in Table 13, results indicate that the mean time spent in independent seatwork by EH students was significantly more than the mean time spent by LD and normal students.

### Independent Seatwork: Time On-Task

In independent seatwork, regular education students and LD students obtained comparable mean on-task scores in independent seatwork ( $\bar{x} = 62.71$ ;  $\bar{x} = 67.85$ , respectively). EH students were on-task a slightly higher percentage of time in independent seatwork ( $\bar{x} = 74.38$ ). As shown in Table 14, no significant pairwise comparisons were indicated at the .05 level.

### Problems and Limitations of the Study

The major limitations of this investigation are apparent when attempting to attribute a causal direction to the obtained results. Because no experimental manipulation was attempted, this study represents primarily descriptive data about exceptional and regular students.

The five elementary schools were initially selected. From these schools, the samples of exceptional and regular children were chosen. Clearance to do research was initially approved by the Board of Education of Alachua County. The researcher was then given permission to have the schools participate in the study. Even though clearance to do research was approved in selected schools, the researcher then contacted principals and special education teachers to set up appointments to discuss the research proposal. In several instances, while principals were receptive, they failed to pass on their enthusiasm to their teachers. As a result, some classroom teachers were not prepared to receive the researcher.

In at least one instance, the observers politely left because the students being observed were becoming very aware of the audience, thus leading to complete disruptive behavior in the classroom.

Subtle differences in teacher behavior were not examined. Teacher management strategies may have affected the on-task and off-task involvement of both exceptional and regular education students in their classroom. The child's physical location in the classroom may also have affected the behavioral responses of others and the child under investigation.

### Summary

Based on daily observations of fourth grade learning disabled, emotionally handicapped, and regular education students in various instructional arrangements, the daily classroom activities can be divided into three major parts:

- (1) academic activities (reading, mathematics, science, and/or social studies);
- (2) "non-academic" activities (music, art, storytime, sharing);
- (3) noninstructional activities (transitions, waiting between activities, class business, etc.).

Similar findings were reported by Denham and Lieberman in the Far West Lab's report of the Beginning Teacher Evaluation Study (Denham & Lieberman, 1980). It is interesting to note that the heavy amount of time in the instructional arrangement, independent seatwork, occurred because teachers frequently divide a class into

three or more groups and if there are three groups in a class, a student can only spend on-third of the allocated time in a teacher-led setting.

Other studies (Stallings & Kaskowitz, 1975; Soar, 1973) have also found that students are more engaged when they are instructed or supervised by a teacher than when they are working alone. Further, the Stallings and Soar studies have found that teacher time spent working with groups of students is positively and consistently negatively related to student gains in achievement. Stallings and Kaskowitz (1975) and Soar (1973) purport the negative may occur because when a teacher is working with only one or two students, the remaining students usually must work independently.

The data regarding the use of instructional arrangements within the groups yielded some significant findings. LD students spent nearly one-fourth of the instructional day in independent seatwork instructional arrangement. LD students are on-task the highest percentage of time in the instructional arrangement one-to-one. EH students spent nearly half of the instructional academic day in independent seatwork. Results also indicated that EH students obtained the highest percentage of time on-task working independently or working one-to-one with the teacher and/or designated adult. Normal students, on the other hand, spent the highest percentage of total instructional time in large group, independent seatwork, and small group. Regular education students, as a whole, spent the least amount of instructional time in the instructional arrangements one-to-one and peer teaching. Regular education students spent a



comparable amount of time on-task in the instructional arrangements large group and independent seatwork. Regular education students spent the least amount of time on-task in one-to-one and peer teaching.

The data regarding the use of the five instructional arrangements among the three groups yielded some significant findings. In large group instruction, both regular education students and LD students were in large group significantly more than EH students, furthermore, regular education students and LD students spent comparable amounts of time and both groups spent significantly more time in small group than EH students. EH and LD students both spent significantly more time in one-to-one than regular students but did not differ from each other. In peer teaching, the three groups did not significantly differ on the time spent. EH students, however, spent significantly more time in independent seatwork than either of the other two groups. Moreover, LD and regular students spent equivocal times in independent seatwork.

In reference to the amount of on-task time spent in the five instructional arrangements among the three groups, results indicate significant findings. Regular education and LD students spent a significantly higher amount of time on-task in large group instruction than EH students. Similarly, in small group instruction, regular education and LD students spent a significantly higher amount of on-task time than EH students. In one-to-one, LD and EH students spent a significantly larger amount of time on-task than regular education students. In peer teaching and independent seatwork, the

three groups did not significantly differ on the amount of on-task time spent.

The results reveal that instructional arrangements are differently used across the three groups and on-task behavior varies across the arrangements. Thus, for teachers to maximize their effectiveness, it is imperative for teachers to consider how they organize instruction across the five instructional arrangements.

Some noninstructional activities appear inevitable. Most classroom teachers observed were fairly similar in the amount of noninstructional activities such as transitions before and after breaks, "housekeeping tasks," and waiting between activities. Even during time allocated for reading and math, interim activities (turning in and passing out papers, getting books, and waiting for help) occupied up to 20 percent in all classrooms. All these activities may be necessary because of large classrooms and varied students.

## CHAPTER V

### DISCUSSION, IMPLICATIONS, AND CONSIDERATIONS

This chapter presents a summary of the findings of this investigation. Moreover, the findings are discussed in terms of implications and selected issues.

The use of various instructional arrangements by regular educators has been the subject of much research in the education literature. Much of the interest has centered around the use of large and small group instruction to improve academic achievement with regular education students. However, the use of various instructional arrangements with LD and EH students has been afforded minimal documentation in the special education literature.

Recent literature suggests that large group, small group, one-to-one, peer teaching and independent seatwork instructional arrangements have been used with various types of students. A close examination of the literature, however, reveals limited information on the percentage of instructional time that students spent in the instructional arrangements or amount on-task behavior that occurs in the respective arrangements.

The present study focused on analyzing the use of large group, small group, one-to-one, peer teaching, and independent seatwork

instructional arrangements with learning disabled, emotionally handicapped, and regular education children. Additional information was obtained by quantifying actual on-task behaviors displayed by children labelled as EH, LD, and regular education children in the instructional arrangements.

### Question 1

The first hypothesis states that there are no differences in the amount of time spent or time on-task in the five instructional arrangements within each group.

#### LD: Time Spent and Time On-Task

The data concerning the amount of time spent and time on-task by LD students within the five instructional arrangements yield significant findings. Data concerning time spent within the five instructional arrangements by LD students suggest that LD students spend significantly more time in small group than peer teaching, large group than peer teaching, one-to-one than peer teaching, and independent seatwork than peer teaching.

Data regarding the percentage of on-task behaviors exhibited by LD children within the five instructional arrangements indicate that LD students spent more time on-task in one-to-one than large group, large group than peer teaching, small group than peer teaching, one-to-one than small group, and independent seatwork than peer teaching.

### LD: Implications

The data suggest that LD students spend nearly one-fourth of the instructional day working alone (independently). While working independently, LD students are on-task slightly more than half of the time. While LD students are engaged in one-to-one instruction slightly more than 15 percent of the given instructional day, LD students are on-task in one-to-one nearly 95 percent of the time. Implications include the following observations:

(1) No large group instruction was observed by the researcher and observers in the resource classrooms. Therefore, the 15.93 percent of the time spent in large group instruction by LD students was spent in the regular classroom. Further research with LD students in large group instruction in the resource room is implicated.

(2) In the instructional arrangement, one-to-one, LD students spent significantly more time on-task than any other instructional arrangements. This appears to indicate that the use of volunteers and/or tutors to facilitate decreased pupil-teacher ratio might be effective. This seems to bear out the findings of Porwall (in Cahen & Filby, 1979) who concluded that reduction in class size and pupil-teacher ratio enables an increase in the individualization of instruction.

(3) Both classroom and special educators must make a concerted effort to train students to work independently in the regular classroom.

As was observed by the principal researcher and assistants, the most predominant instructional arrangements used in the resource

rooms were small group instruction, one-to-one, and independent seatwork. In the regular classroom, LD students were engaged in independent seatwork significantly more than any of the other arrangements. Glazzard (1981) purports that if a student receives individualized, one-to-one tutoring for remedial purposes in a special setting, then that student must be carefully phased back into a group situation by being taught to work independently among others or that student is destined to fail within the larger group settings (Glazzard, 1981).

#### EH: Time Spent and Time On-Task

The data regarding the amount of time and time on-task spent by EH students within the five instructional arrangements yield significant findings. EH students spent significantly more time in independent seatwork than in any other instructional arrangement. The data also indicate that EH children are predominantly taught in arrangements that do not involve peers. In relationship to time on-task, EH students spent significantly more time on-task in independent seatwork and one-to-one than in any of the other instructional arrangements. Implications may include:

- (1) Use academic games, particularly those using gameboards (Regional Support and Technical Assistance Centers Coordinating Office, 1976) for promoting interactions between emotionally handicapped and their peers. To be effective, Salend (1981) suggests that the games should emphasize cooperation rather than competition.

(2) Use volunteers to provide supervision of instruction in one-to-one situations (Lehr & Meyen, 1980). Volunteers may be trained to employ techniques related to intense instruction; for example, feedback to students, maintaining on-task behavior, and individualizing instruction.

#### Regular Education: Time Spent and Time On-Task

The data regarding the percentage and time on-task spent by regular education students in the five instructional arrangements yield significant findings. The data regarding time spent by regular education students within the five instructional arrangements suggest that regular education students spent significantly more time in large group than in small group, one-to-one, and peer teaching. In addition, they spend significantly more time in small group than in one-to-one or peer teaching. Finally, regular education students spent significantly more time in independent seat-work than they do in one-to-one or peer teaching.

Data regarding the time on-task spent by regular education students within the five instructional arrangements indicate that regular education students spent significantly more time on-task in large group than in one-to-one and peer teaching, and significantly more time on-task in small group than one-to-one and peer teaching.

### Implications

The data appear to suggest that regular students are engaged in a variety of instructional arrangements. They are on-task a high percentage of time in large group, small group, and independent seatwork. The instructional arrangements, peer teaching and one-to-one, were the least used of the arrangements and regular education students were on-task the lowest percentage of time in these arrangements. The data appear to suggest that these students can work effectively in large group, small group, and independent settings.

### Question 2

The second hypothesis states that there are no differences among the three groups in the amount of time or time on-task spent in selected instructional arrangements.

#### Large Group: Time Spent and Time On-Task

Results indicate that regular education students spent significantly more time in large group instruction than EH and LD students. Regular education students were engaged in large group instruction three times more than emotionally handicapped students and nearly twice as much as learning disabled students. Emotionally handicapped students, on the other hand, were engaged the least amount of time in large group instruction. Thus, both regular education students and LD students were in large group significantly more than EH students, furthermore, regular education



students were in large group significantly more than LD students. In large group instruction, LD and regular education students spent significantly more time on-task than EH students. Moreover, regular education and LD students spent equivocal on-task times in large group instruction.

### Implication

The data concerning the time and time on-task spent in large group instruction by the three groups suggest several implications. While EH students spend significantly less time in large group instruction than the other two groups, they are also prone to be on-task less time than the other two groups. The findings also suggest that in mainstreamed classes, teachers must assume the responsibility of training students to work in groups as well as independently and in one-to-one. Training students to work in groups, however, does not mean that the individualization of instruction cannot take place. Teachers may work on each learner's objectives when the learner is in a variety of settings from one-to-one, to small group, or independent seatwork. Gast & Gast (1981) add that "considering the mainstreamed child, such diverse instructional environments are not only practical to the teacher, but advantageous to the learner, for they enhance skill generalizations across conditions" (p. 5).

#### Small Group: Time Spent and Time On-Task

The data regarding the percentage of time and time on-task spent in small group instruction yielded significant findings. In small group instruction, the percentage of time spent by EH students was significantly less than the time spent by regular and LD students. Furthermore, the percentage of time spent by LD and normal students was equivocal. In relationship to the amount of time on-task spent by the three groups in small group instruction, EH students spent significantly less time on-task than regular education and LD students.

#### Implication

The data regarding the time and time on-task spent by the three groups in small group instruction appear to suggest that EH students spend a significantly higher percentage of time off-task than the other two groups. Further findings suggest that EH students are likely to be in small group instruction far less than regular and LD students. Furthermore, while in small group instruction, LD and regular education students are likely to be on-task over half of the time. While it appears that EH students exhibit very minimal on-task involvement in small group, both classroom and regular teachers appear to have another option in the teaching of LD students-the small group.

### One-to-One: Time Spent and Time On-Task

Data regarding the amount of time and time on-task spent in one-to-one instruction among the three groups yielded significant findings. Regular education students spent significantly less time in one-to-one than both EH and LD students. While in one-to-one, LD and EH students were likely to be on-task a significantly higher percentage of the time than regular education students.

### Implications

The data regarding the amount of time and time on-task spent in one-to-one instruction suggest several implications. While regular education students are less likely to receive instruction in one-to-one than the other two groups, regular education students are also less likely to be on-task. Moreover, LD and EH students are on-task in one-to-one over 75 percent of the time. This may suggest to the classroom teacher options in working and planning management strategies with LD and EH students, such as volunteer assistance and structured intra-class tutoring.

### Peer Teaching: Time Spent and Time On-Task

No statistical significance was found among the means of the groups in the amount of time spent in peer teaching. In peer teaching, EH students spent a mean percentage total time of 2.70. LD and regular students spent mean percentage times of 2.28 percent and 1.97 percent, respectively. In relation to the percentage of time on-task spent by the three groups, all received similar means. LD students spent a mean percentage on-task time slightly lower

(16.57) than the mean on-task received by both EH (18.18) and regular (17.25) students. No statistical significance was found among the groups in pairwise comparison procedures.

### Implications

The data seem to suggest that the use of peer teaching is not used very much in the classrooms observed. Although students were used in a few classrooms to tutor other students, systematic and structured attempts to use students were rare. However, at one school observed, the school was fortunate enough to have the interactions of "Big Brothers" and "Big Sisters" from local service fraternities and sororities who gave of their time to interact with selected exceptional children and help with their special needs. This arrangement allowed the teacher more free time to work with other students in smaller instructional settings.

Still another activity that involves peers is the use of academic games. As indicated by Ehly and Larsen (1981), students of divergent interests who participate in games learn the principles of cooperativeness, structure, and competition while yet learning from each other.

### Independent Seatwork: Time Spent and Time On-Task

The data regarding the time and time on-task spent in independent seatwork among the three groups indicated that EH students spent significantly more time in independent seatwork than both LD and normal students. In relationship to the amount of on-task behaviors

exhibited among the three groups in independent seatwork, all three groups obtained comparable means. Means recorded by LD, EH, and regular education students in the amount of on-task behaviors exhibited in independent seatwork were 67.85, 74.38, and 62.71 percent respectively.

### Implications

The implications found in these data may also possibly be generalized to other instructional arrangements as well. The implications here appear to address the issue of "organization" of instruction. It implies that it may be easier to control the on-task behaviors of fourth graders when they are engaged independently. It also suggests that instructional materials for fourth graders may not be sufficiently self-instructional, so that a teacher who uses independent seatwork must provide additional components of instruction, such as corrective feedback. In addition, the use of instructional games (self-correcting materials) as alternatives in seatwork is warranted.

### Selected Considerations and Suggestions for Future Research

The present study indicated that teachers use a variety of instructional arrangements in their classrooms. There are variations in the time spent and time on-task in various instructional arrangements. Differences within and among groups exist for EH, LD, and regular education students in the arrangements. Following are suggestions for future research.

### Use of Volunteers for Special Education

With regular and special teachers being given increased responsibility for providing individualized programs to meet the needs of exceptional children in the classroom, alternatives to current methods must be found. As demonstrated in one school observed, both parents and college students were effectively used as volunteers in the special classroom. In a study done on parental assistance, Hedges (1972) found that "with volunteer help, elementary school teachers transfer about 21 percent of their time from lowest to highest level functions and that pupils are given over three times the normal amount of attention" (p. 334).

### Relationship Between Pupil Behavior and Pupil Learning

Although the variable "learning" was not investigated in the present study, there has been some research to suggest that the greater a pupil's engagement with a learning activity the more he or she is likely to learn. Various researchers have indicated that certain internal states or habits will affect learning directly, e.g., how much the pupil expects to learn or to be able to learn, the pupil's attitude toward what is to be learned, and his or her general aptitude for learning and learning style. Additional research on all of the stated variables are needed.

### Relationship of On-Task Behaviors to Activities of the Teacher

Various researchers suggest that differences in incidence of on-task behaviors are positively related to the instructional area, the instructional context and the teaching activities. Denham (1980)

contends that one must expect to find different types of pupil behavior and differing frequencies of pupil behavior, depending on the grade level of the child, whether the child is involved in reading and/or math, whether the child is working independently, and what the activity of the teacher is.

#### Use of Peer Tutors in Classrooms

Although peer tutoring was used in some schools to a limited extent, none of the schools observed used peer tutoring to a significant degree. Questions about the utility of peer tutoring remain to be addressed. Does peer tutoring really work? If so, under what conditions. Is the best strategy to allow students in the same room tutor one another, or is it more efficient to let fifth and sixth grade students tutor younger students? Can all students be tutors? The number of adequate studies related to these questions does not justify firm conclusions at present; however, most of the data that do exist suggest that peer tutoring has some positive learning influence on both tutor and tutee and, at the same time, frees the teacher to work with students who need special help (Good & Brophy, 1978).

#### Validity of Coding Decisions

The validity of some coding decisions regarding on/off-task behavior is almost always open to question. Is the pupil who looks at the teacher really listening? Is the pupil who looks out the window really inattentive? Pupils' on-task behaviors (involvement) appears easier to classify during periods of assigned seatwork than

during periods when the teacher is engaged in large group instruction. In this research, validity problems are real and need to be acknowledged. Still, the reliability of the observers was excellent. When the observers were unsure of a coding decision, they recorded the decision with a written explanation of how the coding decision was made. Furthermore, when interrater reliability between the principal researcher and each observer was done, the researcher and the observer were in close agreement.

### Summary

The data suggest that regular and special educators use a variety of instructional arrangements. Moreover, the data reveal that certain types of instructional arrangements may be unique to specific children. For example, while all five instructional arrangements are used with EH students, the most predominant form used is independent seatwork. This may suggest that EH students work better alone or are on-task more in independent seatwork activities.

Another factor which appears to effect the type of instructional arrangement used is the subject area. For example, the subject of math lends itself to independent seatwork and drill work, whereas it may be more difficult to plan spelling independent seatwork activities.

In relationship to the on-task involvements of the three groups in the five instructional arrangements results indicate



that all three groups were off-task a relatively high percentage of time in many of the instructional arrangements. It is a challenge for educators to examine such variables as (1) expectancy, (2) stimulus factors, (3) response factors, and (4) consequence factors, when planning instruction for children. The essence of this research is that the teacher must continuously match the learner, the task, and the instructional arrangement for optimal student progress. Teachers need to judiciously apply these according to individual needs and topics.

APPENDIX A  
DEFINITION OF EMOTIONALLY HANDICAPPED STUDENT

According to the Alachua County Procedures for Providing Special Education for Exceptional Students (1980-81), an emotionally handicapped student is one, who after receiving supportive educational assistance and counseling services available to all students, still exhibits a persistent and consistent severe emotional handicap which consequently disrupts the student's own learning process. This is the student whose inability to achieve adequate academic progress or satisfactory interpersonal relationships cannot be attributed primarily to physical, sensory, or intellectual deficits (p. 72).

Criteria for Eligibility

1. Evidence that the student has received supportive educational assistance counseling.
2. Evidence that the student exhibits a persistent and consistent severe emotional handicap as determined by documented observations and psychological evaluation.
3. Evidence that the behavior disrupts the student's ability to achieve adequate academic progress or develop satisfactory interpersonal relationships.

4. Evidence that the primary problem of the student cannot be attributed primarily to physical, sensory, or intellectual deficits.

#### Procedures for Student Evaluation

In addition to General Procedures for Determining Eligibility, the following requirements must be met.

1. Prior to the evaluation for determining eligibility, the following data shall be collected:

- a. Documented and dated evidence that conferences concerning the student's specific problem have been conducted. These conferences shall include, but not be limited to, the parents or guardian, administrative personnel, teaching personnel and student services personnel; and documented evidence that a social or developmental history has been compiled directly from the parents or guardian.
- b. Documented and dated anecdotal records or behavioral observations made by more than one person, excluding the referring teacher, which cite the specific behaviors causing the referral.
- c. Documented evidence of at least two interventions, one of which must be counseling. These interventions shall include, but not be limited to, change in the student's curriculum, change in techniques of instruction, interventions provided by Student Services personnel, community agency intervention, or Health and Rehabilitative Services agency intervention.

- d. A physical evaluation is required by the Director of Exceptional Student Education, or the designee, for all students where a physical problem is suspected as precipitating the behavior problem. A neurological examination shall be required if deemed necessary by a psychologist or a physician.

For students entering from a public agency that deals with emotionally handicapped, or in a program organization as described on page 74, section 8E, on the Procedures, these requirements may be waived.

2. Reevaluation includes:

- a. Revision of individualized educational program periodically, but not less than annually.
- b. A minimum of a formal social-emotional evaluation of the student is conducted at least every three years or whenever conditions warrant, including at the request of the student's parents, guardian, or teachers.

# APPENDIX B

## CLASSROOM OBSERVATION FORM

Pupil \_\_\_\_\_  
 Educ. Designation of Child \_\_\_\_\_  
 Subject Area \_\_\_\_\_  
 Time Block \_\_\_\_\_

Time Began: \_\_\_\_\_  
 Time End: \_\_\_\_\_  
 Total Minutes: \_\_\_\_\_

### Instructional Arrangements and Observational Categories

### Task Oriented Behaviors (On/Off Task)

Large Group  
 Duration (Time) Code


\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Small Group  
 Duration (Time) Code


### Task Oriented Behaviors (On/Off Task)

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

# Classroom Observation Form

Task Oriented Behaviors  
(On/Off Task)

One-to-One  
Duration (Time) Code


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Task Oriented Behaviors  
(On/Off Task)

Peer Tutoring  
Duration (Time) Code


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# Classroom Observation Form

Materials with Child (Independent Seatwork)  
Duration (Time) Code


Task Oriented Behaviors  
(On/Off Task)

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-----
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## Observational Categories:

- LA = Language Arts
- M = Math
- W = Wait
- T = Transition
- M = Management
- B = Break

## Explanation:

- t = on task
- 0 = off-task
- \*20 second intervals
- 20 minutes of data per instructional arrangement per child in academic setting.
- \*5 seconds latency response.

## APPENDIX C

### OUTLINE OF OBSERVATION CATEGORIES

The following is a list of the observation categories with very brief descriptions of each.

LA = Language Arts.

M = Math.

W = Wait. Wait refers to periods of no activity and no movement between activities. This would often occur when a student finishes his/her work early and no other activity is initiated.

T = Transition. Transition refers to the periods of change from one activity to another. This might include lining up, taking seats, or quieting down between the next activity.

M = Management. Management refers to the conduct of class business that is unrelated to any instructional activity. This includes such things as the collection or distribution of milk money and making arrangements for a field trip.

B = Break. Break includes any recreational or free period, such as recess, unstructured PE, lunch, milk break, and leaving class to use the restroom.

O = Other academic instruction. Other academic instruction refers to academic instruction other than reading and math. This includes social studies and science (where there is no reading or math content).



Instructional Arrangements

Large Group - teacher and/or designated adult figure with six or more students.

Small Group - teacher and/or designated adult figure with five or less students.

One-to-One - didactic instruction occurring with one child and teacher and/or designated adult figure with child.

Peer Tutoring - peer teaching on a one-to-one basis.

Materials with the child (Independent Seatwork) - child working on assigned task (i.e., worksheet) independently without the teacher's assistance.

# APPENDIX D

## CLASSROOM OBSERVATION REACTION FORM

If you wish to comment on today's observation of your classroom, please respond to these items and/or write any additional comments which would help us to improve the observation process.

Circle the appropriate choice.

- A. The observation was conducted at a most convenient time.

1	2	3	4	5
Completely False	Mostly False	Partly False/ Partly True	Mostly True	Completely True

Comments:

- B. The classroom situations observed were representative of the normal activities of my class.

1	2	3	4	5
Completely False	Mostly False	Partly False/ Partly True	Mostly True	Completely True

Comments:

- C. The classroom observer did not distract from the classroom activities nor the effectiveness of instructional activities.

1	2	3	4	5
Completely False	Mostly False	Partly False/ Partly True	Mostly True	Completely True

Other comments concerning the observation:

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## BIOGRAPHICAL SKETCH

Martha Scott Lue was graduated from Howard Academy High School, Monticello, Florida. Upon completion, she attended North Florida Junior College and Florida A & M University. Upon obtaining a B.S. in speech pathology at Florida A & M, she enrolled at the University of Missouri, Columbia, Missouri, obtaining a Master's in speech pathology.

After having moved to Atlanta with her husband in 1970, she enrolled at Georgia State University in the special education Ed.S. program with a specialty in learning disabilities. It was in Atlanta that her son, Marvin, was born.

In June, 1979, she enrolled in the doctoral program in special education administration at the University of Florida. Her goal aspirations are to become a writer, researcher, and an administrator.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



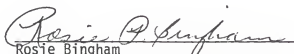
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